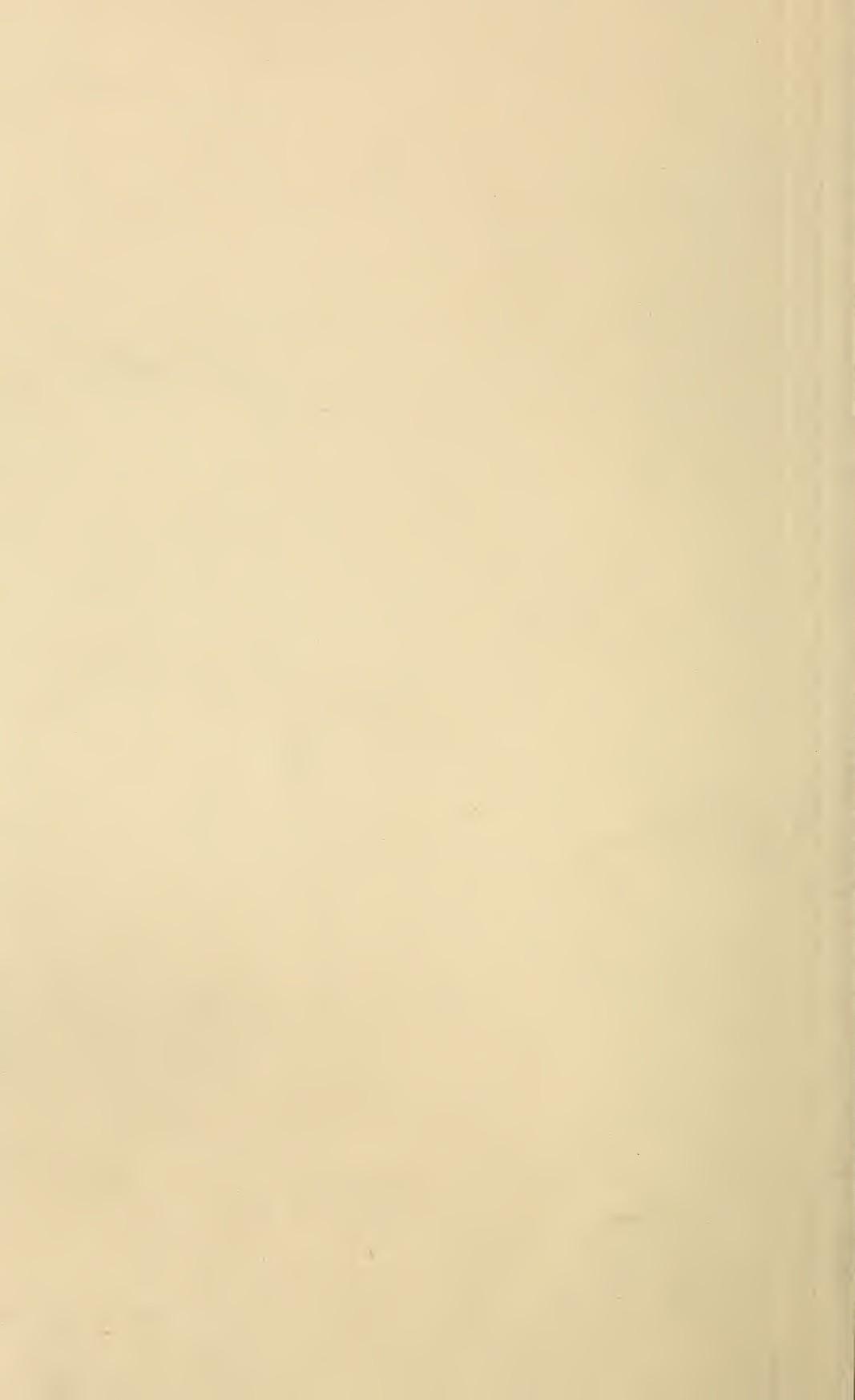


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GLEANINGS IN BEE CULTURE

A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY

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THE QUEEN-EXCLUDER was the invention of a German tailor, Hahnemann, still living in South America.

FOR HOT-WEATHER DRINK, Mrs. Collins recommends cherry phosphate sweetened with honey. It can always be on hand, even when lemons can not, and a set of thrashers gave coffee the go-by for this drink.

W. H. PRIDGEN says in his catalog that, in introducing a queen, instead of allowing her escort bees to remain with her it is an improvement to replace them with very young bees from the colony to which she is to be introduced.

A REMARK of Rambler, page 504, suggests that only adepts can move bees in California without loss. About how many colonies in a hundred are lost in ordinary California moving? I think no loss of this kind is counted on in the North.

GOTTFRIED RUMLER thinks he has thoroughly established the fact that the debris on the floor-board of the hive in winter consists largely of the bees' excrements, and that the normal, healthy bee always, and as often as occasion requires, discharges its feces in dry and solid form.—*Bienen-Vater*.

M. DEVAUCHELLE says that not only does the queen diminish her laying in the fall, but the workers themselves cease caring for the brood. In August or September one finds eggs and sealed brood, but no unsealed brood, and that for fifteen or twenty days. But he says heavy feeding in the fall will continue the laying.

"IF I WERE in your position I should not know but that some time I might wish to run for extracted honey exclusively, or very largely, at least. Then how about those metal spacers on the uncapping-knife?" (Footnote, p. 502). That's a good bit like advising me to trade off my trim little roadsters for a pair of Clydes because some time I might want to draw a heavy load. But the spacing-nails don't interfere such a great deal, after

all. When uncapping you have to look out only for two nails at the upper end—none on the other end.

"INSTEAD OF the queen laying her eggs on the outside of the cluster, she lays them in the center of the brood-nest, where they should be." That "where they should be" raises the question whether Nature's plan of enlarging the brood-nest in spring is all wrong. [Whom are you quoting, doctor? I dare not say that I wrote nothing of that sort. If I did, I do not subscribe to it now.—ED.]

THE LARGE WAX-MOTH is generally supposed to be the only one that does much mischief. R. Kaempf says that, after years of observation, he is sure the small kind (*Galleria alvearia*) is much more destructive. It lives mainly on the cappings of brood. [Our apiary is made up so thoroughly of Italians that the wax-moth of either kind is no more feared than so many flies. From our experience I can not tell which is the more destructive.—ED.]

A VALUABLE BOOK for beginners would be one containing all the plans and inventions that have been tried and given up in the past—save lots of disappointments. But it would make a big volume. [Yes, it would be a good thing; but the demand for them would be small. The average bee-man does not begin to suspect how we poor publishers are pestered with drawings and models of old things that have been invented over and over again, and as often discarded. But the most unpleasant feature about the whole business is that they will go ahead and patent them without asking the opinion of some practical bee-keeper.—ED.]

COLD WATER is better fresh, every one knows; but not every one seems to know that hot water is very much better fresh. Whether for drinking clear or in coffee or in any other hot drink, it is much better when first brought to a boil, or as hot as wanted, than when it has stood and stewed till all the gases are gone, leaving it flat and unpalatable. [You are just right, doctor. I wish more of our sick and ailing people would study more into the merits of the hot-water treatment. A good many believe it is a good thing, but drink it at mealtime, or within half an hour of it, making an indigestible slop of the food. It should

be all of an hour before taking food. When the water has passed from the stomach then the food can be properly digested.—ED.]

"NEVER APPROACH bees when sweaty, because it makes them ill-natured," is a bit of advice given in *Le Progres Apicole*. May be good advice for amateurs, but those who must work all day long and every day at their bees can hardly heed it. [I know this advice is often given, but I could never see that bees were more inclined to sting when the apiarist was sweaty. It may be easier for the bees to run their little javelin through the epidermis when it is wet or moist than when dry. I have seen it stated, also, that bees will sting black hats more readily than hats of other colors. While I believe they have a regard for color, yet I think it has nothing to do in stirring up their fighting qualities.—ED.]

"BUT VENTILATION through the top would be too much of a good thing, would it not?" asks the editor, p. 501. I'm not at all sure of that. If I were running for extracted honey I think I'd have top ventilation, or at least some ventilation above the lower entrance. In any case I want an entrance to the upper story in hot weather when there's more than one story. The bad thing about ventilation at top is that sections near it are sealed too slowly. [It may be you are right; but is there not danger that beginners will overdo the matter in arranging for top ventilation? Spreading the brood in the spring is one of the fine arts, and beginners had better leave it alone. Is not the same thing true to a great extent regarding top ventilation?—ED.]

"ARE YOU REALLY SURE, DOCTOR, that some Italians have longer tongues than others? Trot out your evidence," says footnote, p. 502. I have no evidence of my own—have no glossometer. But I've read much evidence to that effect (and I hardly see how it could have escaped your notice). In France they told just how many millimeters' difference there was in different tongues. At Agricultural College, Mich., they say they have increased the tongue a definite amount. And how about the red-clover strains which get honey from red clover when others do not? [I am not prepared to say you are wrong, doctor. When you have time, give us the measurements of the various bee-tongues; then let our agricultural colleges investigate the matter—ED.]

MR. EDITOR, you say, p. 519, "It may be possible for *you* to have as much brood in one eight-frame brood-nest as two. I believe I *could* do it myself by reversing, and by wasting a great deal of time." I can't possibly understand that. Please tell us what kind of reversing you'd use to get into eight frames as much brood as will be found in 12 frames three-fourths full of brood. [That would be impossible, sure enough, doctor, because there would be more superficial surface in 12 frames three-fourths full than in 8 frames quite full. I did not have in mind any particular number of brood-frames nor any particular amount of brood in each frame; but I find this to be true: The queen does not like to lay in the two outside combs, especially on the outside surfaces

of said combs. She will sometimes do so when she is pushed for room; but as a rule the bees will have the outside combs filled with honey before the queen gets to them. I can get, as I said, more brood in two stories, but that brood will be confined to the *inside* combs of each story. The way it often works with us is this: There will be six combs in the lower brood-nest from a half to two-thirds full of brood, and in the second story there will be four or five about equally well filled providing the queen is prolific or is not too old. Now, if I can get one hatching of bees from all these combs in a week or so *before* the honey-harvest, I find very little trouble about bees going into sections. We have heard a great deal about the difficulty of forcing bees to go into boxes; but I think the main trouble, outside of a poor honey season, is that the colonies are too weak. The hives should be fairly boiling over with bees so that they will be compelled to go into supers to get room, if for no other reason.—ED.]

EXPERIMENTS made by Prof. Plateau, in which he removed the colored parts of flowers, go to show that bees are attracted neither by the form nor the color of flowers. The showy parts of the single dahlia and other composite flowers have nothing to do with attracting bees, as formerly supposed. He thinks they are probably attracted by smell.—*Muench. Bztg.* But have not other experiments shown that bees are largely guided by sight? [Yes, indeed; Mr. F. A. Salisbury has made experiments along this line, that to me prove conclusively that bees are somewhat guided by color. It will be remembered that he uses house-apiaries. The one I saw is long, and the portico entrances are alike along the whole side of the building, except that each entrance-front is painted a different color from the one adjoining. He says he has repeatedly observed that the bees at one entrance having a particular color—say red, for instance—if they become confused at all as to their location will seek an entrance having the same color ten feet away. In other instances, I think, he placed some obstructions in front of the hives, and the incoming bees would straightway find an entrance of the same color, and not, as one might suppose, an entrance close at hand, of a color different from its own. Other instances of a similar character have been reported, and I regarded them as thoroughly conclusive. Some one has said (Darwin, I think) that the reason why flowers are of various colors is for the purpose of attracting bees. Some one else, Cheshire perhaps, states that the honey-bearing flora has but little color as a rule, and in other respects is quite inconspicuous. But they have the *nectar*, which is sufficient to make up for the loss of color; moreover, that the highly colored flowers are, as a rule, non-nectar-bearing. But nature designs that insects attracted by the color shall seek out these flowers, and mingle the pollen. *Later:*—Have just talked with A. I. R. He says he proved years ago that color had as much influence as size or shape; that an old red hive he had he could move anywhere and the bees would follow it.—ED.]

GENERAL CORRESPONDENCE

SELLING COMB HONEY TO GROCERS.

Be Your Own Drummer; Work for and Expect Large Sales; Be Businesslike, and Answer Objections; Labels and Second-class Sections.

BY G. K. HUBBARD.

Concluded from last issue.

At your next call you find a man who hardly ever keeps any honey unless he gets a little occasionally from a customer.

"The times are too hard. It won't sell."

"But sometimes people buy honey because the times are hard."

"How so?"

"I see you have some high-priced preserves and jams on your shelves here. The trade that has been getting such goods is apt to buy 15 cents' worth of honey just because it does not feel flush enough to buy something more expensive. Or, instead of going home without candy or something that the children want and expect, a man will take home a few sections of honey and tell the children that these hard times they will have to get their sweetmeats at the table with their meals. In such cases you would sell the honey, if you had it, when you would not sell either the expensive preserves or confectionery. You are not paying store rent, and putting in your time, for amusement, but you are here to sell goods; and if the people do not find what they want here they will buy elsewhere."

"I don't think my trade would pay the price for the fancy honey, and I do not like the cheaper grade."

Removing the contrast by turning the fancy case so that the honey in it can not be seen, you reply, "This is a better grade of honey than you think. The only possible objection to it is that of color. It is just as pure and healthful, is well filled, and is in every way as good an article as the bees can make from the flowers it was gathered from. You would be surprised at the ease with which you can sell this grade of honey by mentioning its purity and flavor if any one remarks about its color. I have only three cases of this dark grade left, and I can't see how you would regret it if you would let me bring in the lot."

"I could not use three cases of it, but I believe I will try one case and see how it goes."

At your next call where you find any prospect of a sale the proprietor says, "Yes, that is fine-looking honey; but I have had it here as nice, or nicer; and when I took it home to eat I found so much filler in it that it was tough inside."

"You mean the comb foundation used in the middle, I suppose. Yes, I know some bee-keepers are very careless about this. They use an inferior grade of home-made foundation which can not be detected until the hon-

ey is cut, and it is bound to give any thing but satisfaction. We all use some foundation in order to get the combs built straight in the sections; but I am very careful to use only the best article that can be made. The foundation I use runs 12 square feet to the pound, is the purest and best to be had, and is actually thinner than much naturally built comb. In all the little points in honey production I try to keep posted, and put out as fine an article for its grade as any bee-keeper I know. If I sell you the four cases I have left, and you do not find them to be strictly all right I will take them off your hands and refund the money the first time I am over; or if you write me a line I will come promptly and get them. I am not here to-day merely to sell what honey is now needed, but to build up a trade and make an outlet for my large crop this season, and probably for other seasons."

"We always sell our honey by the frame, and we sometimes get it that is every weight and thickness, which results in a lot of culling-over, and then having to sell the last few frames at a discount, may be below cost. I see this case is pretty much all one thing, but you have irregular or partly filled frames sometimes, don't you?"

"Yes, sir; but when you buy regular-grade honey of me, that is exactly what you get. I dispose of extra thick and thin combs at some boarding-houses near home. The honey I put on the general market is cased up with the wishes of the grocer in view. Well-capped sections that will not weigh 12 ounces are cased by themselves and sold together. There are some grocers who prefer these light-weight sections because they cost less, and they prefer to sell something that goes at a small price. By having the honey in a case somewhat uniform in weight it saves the picking-over that is apt to happen when there is a great difference in either color or weight in the sections in a given case."

"But I wouldn't want to buy four cases. You would sell me one of your best grade, wouldn't you?"

"Yes; but surely one case of honey is a small matter for a man with the trade you appear to have. I should like to sell you enough to last until I come over again. Better take one case of each grade, at least."

"My trade does not go much on a poor article."

"But my dark honey is not a poor article; in fact, many bee-keepers who are not so careful with their honey would call this their best. It is a good idea to let a customer have his choice in such matters, and then you will not have people saying they can buy for a cent or two less elsewhere. It is easy for them to be deceived in quality while remembering the price. To illustrate, you probably have a great variety in price in the same kind of canned goods, and your customers make their selection. Why not give them the same chance on honey?"

He objects to the price, and wants a liberal discount if he takes two cases; but you emphasize the rebate on the cases if in good condition; tell him the last section in a case will

sell as readily as the others, and that you warrant satisfaction.

You get your money, and go back to your wagon with two cases yet to dispose of. You have been to all the groceries, and are not sold out. Now you try the bakeries.

"I see you do not have any honey on sale here, yet some of the bakeries over our way sell more than some of the groceries."

"We never have any call for it."

You smile, and say, "Yet that does not prove you could not sell it. You do not have call for strawberries at this time of the year, either; but they would surely sell if you had them in sight. Probably half the comb honey that is sold is carried home because the customers are in the store on other business, and, seeing the honey, take a fancy to it and buy it. If you had this case of honey on the shelf back of you, right here in plain sight, it would not be long before some customer, taking home some fresh bread or rolls would want to take along a section or two of honey also."

"But we buy some strained honey for use in our baking, and we have some Mason jars of it on the shelf up there, you see, and it does not pay for the bother of fussing with it, for we hardly ever sell any."

"Well, I'm not much surprised, because it is not labeled, and people do not know what it is. When you strain your honey the 'poetry' is all taken out of it, as a lawyer friend of mine says. Comb honey is always attractive, will sell itself, and if other bakers do well with it I don't see how you would miss it. You can make 25 per cent on it, and whatever you make will be just that much extra to help pay rent and keep business on the move. You can rest assured that, if you had these two cases here in sight, the people would buy it. Besides it is attractive, and helps give your place a neat and filled-up appearance."

"If you want to leave one case here and let me try it I will pay you for it if it sells, and if not you can get it again some time."

"I thank you for the offer, but I can't accept it. If I should do business that way I should have to raise my prices to cover an occasional loss from failure or fire, or something else. My prices are as low as they can be for a good article, and I have to sell for cash."

"Another sale made; but the other bakeries do not care to take the remaining case, and so you go to the hustling young fellow who runs a fruit and confectionery store in a little 7 x 9 room under a stairway a few feet from the leading business corner of the place.

"You occasionally have quite a loss by your fruit spoiling on your hands. Here is an article that will make you a good percentage, and will last for years so far as its keeping qualities are concerned. The investment is absolutely a safe one because it is sure to sell, even if it does not go off with a rush."

He likes the idea first rate, and your purse is heavier and your wagon empty.

Now, do you think I have made this appear too easy? Not a bit of it, unless the market is actually glutted with an enormous crop. In that case my advice would be that, if you

can not make sales after trying various places within your reach, wait a few months and try it over. You had better borrow money and hold your crop than to sacrifice it. I am sure, however, that some earnest work along this line will give you good results under almost any circumstances that you are apt to find, for conditions vary greatly in towns within a few miles of each other. I know of two cities 9 miles apart where the retail price of honey has been different by 25 to 40 per cent. You will find a good many things that are new to you if you will do some exploring along this line.

If you are fortunate enough to have a crop of honey that averages very high, you will be surprised to see how easy it is to interest people; but your lower grades should be pushed along in proportion to what you have. You do not want a lot of low-grade honey on hand, with the best all gone. The price-mark is the safety-valve. You can sell anything if the price is right; but have your price high enough so you will have to talk it up to sell it.

One party said to me, "Your honey gives good satisfaction, and I have made a good profit on it; and any time you are over, come in and see how I am stocked."

No wonder he was pleased, for he had sold lots of it, and at prices from 20 to 25 per cent higher than I supposed he was getting, and higher than the other grocers in town were getting. He had a large and fancy trade, and was actually clearing 40 to 45 per cent on my honey.

Give your customer a square deal on grading, etc., and you will often be pleased to hear such expressions as: "Just set it right on the counter; here is your money. I am too busy to open it and look at it. The other was all right, and I will risk this being the same."

"How many have you? Two cases of fancy and three of amber? All right; carry it to the back of the store; I'll take your word for it." "I don't know but your price is a little high; but I like the way you put it up, and it sells as well as any honey I ever bought."

You will soon get acquainted with your trade, and if you do your part you will get a top-notch price, will not hear any thing about "trade it out," will not be badgered about cutting prices, and will be treated in a friendly and businesslike way on every trip, with numerous invitations to "call again when you are over."

Once on my first call, as I set a beautiful case of honey with a three-inch glass front on a gentleman's counter, and removed the cover, he read aloud the fourteen-inch label on the front of the case, "Gathered from Orange Blossoms;" and then as he saw the 28 neat labels printed in red ink, pasted on the sections, with the snow-white honey smiling up at him from between, he slapped his hands together and exclaimed, "By jolly!" I need not tell you he has been my steady customer since, although he thought my price was high, and I knew it was high enough.

With the finest honey from clover, orange, willow-herb, sage, etc., you need not be doubtful about placing it to advantage in almost any market; and while I know that the majority of

readers will not take the pains with their crops that I do, nevertheless if you will take the honey you have, and make a business-like effort something like the one above, you will find that you can dispose of it, even if that supplied by more expertapiarists does surpass yours in quality. With a first-class article you will find yourself taking too small a load to market oftener than too large.

I do not label all my honey, but I think I shall do more of it in the future. I have observed that it gives the honey a finish, and pleases the customer well enough so that I am pretty safe in counting it to bring 25 cents per case extra.

The labels cost less than three cents, and a boy will stick them for one cent per case. The cost of this is offset by using second-grade sections. I get my finest honey that I expect to label in the cheapest sections. In fact, the only advantage worth mentioning that I know of, in using snow-white sections, is in the clean appearance when the cover is removed. The labels do the same; and while I have had scores of merchants take out the sections and examine my labeled honey I never heard one remark that the sections were not the whitest. They look at the honey and not at the frame it is in. There is too much straining after "snow-white," "extra polish'd," etc., according to my way of thinking.

There are a good many ideas in the above that may be helpful to those who sell their crops by peddling from house to house; but in such cases the point I would emphasize is to first quote the price per case or so many sections for a dollar. If there is to be any talk about your selling just a few sections let the other party start it, or you can make the offer after your first proposition has been refused. You will never sell a case to one party by trying hard to sell 25 cents' worth. Work for large sales, and expect to make them.

Riverside, Cal.

THE NEW DRAWN FOUNDATION WITH NATURAL BASES A SUCCESS.

As much Comb as Extracted; an Interesting Experiment.

BY L. STACHELHAUSEN.

Mr. E. R. Root:—I received samples of your drawn foundation with natural base three days ago, and experimented with them at once. For the experiment I used two rows of four sections in the middle of a T super (plain section with fences). At both sides of these two rows were sections containing some honey, but not sealed as yet. Three of these eight sections had the new drawn foundation. One section had a comb drawn by the bees from foundation, but without any honey, and four sections had common foundation. The sections with the drawn foundation were arranged alternating with those containing common foundation. The honey-flow is moderate, and the colony is not very strong, but worked in sections since the beginning of the honey-flow.

The so prepared supers were given to the colony at 9 o'clock, June 25, and at half-past 10 the bees were working busily on the drawn foundation. They had gnawed down the side walls—about half (on some places more); at one spot of one section they had gnawed holes into the base of the cells. The midrib still had the glasslike appearance. At 3 o'clock the holes in the cell-bottoms were repaired, the drawn foundation fastened all round to the section; the side walls were shortened everywhere, and strengthened by that thick rim on the edge common to natural combs. At some places the cell-bottoms do not look so glassy now. The bees did not work on the common foundation at all, but had carried a little honey into the drawn comb.

At 6 o'clock in the morning, June 26, the drawn foundation looked just like natural combs. The bees did not work at all on the cell-bottoms, but they do not look glassy any more. No common foundation is worked by the bees as yet.

At 7 o'clock in the morning, June 27, the common foundation is drawn by the bees, and show the same thick rim. No honey is as yet in one of these sections, except in the drawn combs. The honey in the other sections is now about half sealed. The combs of the two different foundations look now just alike, and, in fact, at 3 o'clock I found the first honey in both kinds.

From these circumstances I can say that the bees at once commenced to work on the new drawn foundation in the same way they would work on an even extracting comb. I had the same experience with the drawn foundation of last year. They work out these foundations before they need new cells for storing honey. I am of the opinion the bees will work on these foundations with or without honey coming in.

One difficulty in raising comb honey is to start the bees to work in the sections. I am convinced they will work in a section super with drawn foundation just as they will in an extracting-super with empty combs, so I see no reason why, by the help of the drawn foundation, just as much comb honey as extracted could not be raised. Under certain conditions common foundation is drawn out and used for storing honey at the same time when natural combs are used by the bees; but the same thing is true with extracted honey; but then bait combs are necessary, and the new foundation works better than bait combs. If the new article is not too high it will be a very great help to the comb-honey producer.

Now, I have a few words to say about a matter somewhat relative to this foundation. On page 124, Feb. 15, 1898, you say in a footnote that the bees thin out the midrib of the foundation, while I am of the opinion they do not. In an article in the *Southland Queen* I explained the way in which the bees build combs (*the modus operandi*); how the hexagonal form of the cells and the pyramidal form of the cell-bottom is a mechanical necessity caused by the way of manipulation, and that we do not need to suppose a higher instinct of

bees that teaches them to solve this wonderful mathematical problem. This problem is very old; but no reasonable solution is given as yet, so far as is known by American bee-keepers. Nevertheless, my article did not pay much attention except to Dr. Miller and a Mr. Skagg, each on a quite subordinate affair. Occasionally, I said, the bees do not thin out the midrib of foundation, because, in the way they are used to build natural combs, they can not do it. That the bees do not thin the midrib of the foundation is not only my opinion based on many observations, but it is the opinion of all German and most American bee-keepers; and you say (in GLEANINGS, page 248, April 1, 1897), "We have made the statement that bees will thin down the walls of foundation to a natural thickness, but *seldom if ever* touch the base." It is plain now. If the bees ever thinned out the base of a foundation you did not know it on April 1, 1897. In Nov., 1897, issue of the *Southland Queen* I said the same thing except that I used the words *never* for "*seldom if ever*." How is it that you express a quite different opinion, Feb. 15, 1898, and take me to task because I had not tested the matter as thoroughly as I should have. The cross-cuts of combs you have reproduced in GLEANINGS all favor my opinion, and on the next page it seems you have changed your opinion again when you speak of the no-wall foundation.

It is always a bad thing to say that bees *never* do this or that, and I am guilty of doing this. If anybody says the bees do it anyhow, we can't prove that we are right and he is wrong, because we can possibly prove that something exists; but if we have never seen a certain thing it is no proof at all that it does not exist. In one way I have to change my opinion. While in all my experience I never observed a single case where the bees had thinned the base of foundation, it was too hasty if I said they can *not* do it. Besides the usual way in which the bees build natural combs, they work the wax in some other way in exceptional cases; for instance, when they repair small holes in combs and foundation, or if they close the last hole in sealing a honey or brood cell. So it seems not impossible that they can thin the base of foundation, and may do it in rare cases.

But different bee-keepers say they have hundreds of combs built from foundation where the bees had thinned the base to natural thickness. I think they are in most cases mistaken. What causes this mistake, I can't tell; but when the side walls are thinned and prolonged, the base looks thinner too, and it would take an exact investigation to decide the matter, for which the bee-keeper has no implements.

Cutoff, Texas, June 27.

[On receipt of the above I handed it to Mr. Weed, with the request that he attach a footnote explaining why there are little holes in the bottom of the bases, and this is what he says:

Mr. Stachelhausen's report seems so complete that it requires very little comment; but I should like to explain why some of the cell-bases were gnawed. We

have had the same experience here, and in every case found it was caused by defective places in the machine, which occasionally punched holes in the base of the cells. This defect has now been nearly remedied, so that it rarely occurs. We are now beginning to build machinery for 1899, and I feel sure that the product next year will be very near perfection.

[Mr. Stachelhausen's experience with drawn foundation is almost identical with our own; but as we have an ax to grind in the matter, our *ipse dixit* might not be accepted as readily as his, or that of one who, like Mr. Stachelhausen, has no ax to grind.

With reference to the item on page 124 for this year, I was surprised to note that I said just the opposite of what I intended to say. That this is true, you will see by referring to the last paragraph of the last column on the next page, where I imply that the bees will not thin the bases, but will the walls. I meant to have said that our experience was exactly like that of Mr. Stachelhausen; hence we agree exactly. It was friend Skaggs who should have tested this matter thoroughly with a micrometer.—ED.]

JOSEPH P. ISRAEL (SKYLARK).

BY J. M. HAMBAUGH.

We were temporarily located in the Gross property for one year after our arrival in Escondido, which is situated on an elevation overlooking the city, and probably 40 rods back from the public avenue. It was but a few months after our arrival that my attention was drawn to a one-horse vehicle, slowly ascending the grade in the direction of our humble domicile. A small gray-haired bushy-faced person was clinging to the lines, and seemed intent on allowing the horse abundance of time to accomplish the task of reaching the summit, which he did successfully.

"Is your name Hambaugh?" greeted my ears in a manner that caused me to stare.

I answered in the affirmative, and with outstretched hand and a smile mantling his pleasant features he responded, "You are the man I have been hunting. My name is Israel."

His horse was sheltered and fed, and he was compelled to accept of our menu, or bill of fare, for one meal. The subject of bees was the main topic, fore and aft, yet Mr. Israel's previous long experience in the business here in California made me more of a willing auditor than a pressing conversationalist. His visit here to me in a strange land, and among entire strangers, was greatly appreciated. On his departure we were kindly invited to visit him in his rural home in Spook's Canyon, which we agreed to do at the earliest convenience.

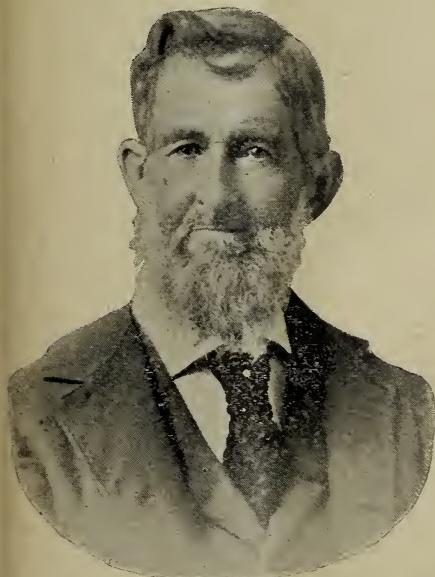
It was in June, 1896, that, with our little family snugly tucked into our surrey, we started for an outing, and determined to hunt out our old friend in the deep recesses of the somber, silent canyon. Nothing worthy of note came to our observation until the winding spiral roadway leading down into the canyon was reached. Here we go down, down, around abrupt mountains on one side and a yawning chasm on the other. Down,

far below in the gulch, springs of transparent water trickle from the rocks, which nourish the fern, wild honeysuckle, and other plants that hide in the cooling shades where the sun's rays never enter.

Abruptly rising above this are shelves and piles of rocks, above which may be seen enormous boulders projecting far out of reach of the ordinary footman, and where the wild eagle is wont to hide his nest. But we must hasten.

As we near the final termination of our descent we enter a beautiful shaded live-oak grove, equipped with rostrum for a speaker, and seating capacity for an audience of several hundred. It is here that the spiritualists hold their annual camp-meeting.

In accord with instructions given us we found the unfinished adobe house, turned abruptly to the right, and half a mile up the huge canyon we reached the unpretentious domicile of our friend.



J. P. ISRAEL, THE MAN WHO HAS BROKEN THE RECORD IN COMB-HONEY PRODUCTION.

Mr. Israel's daughter was at home, being the vacation from fruit-packing, at which she is an expert, and commands a good salary in Fresno during the packing season. We found Mrs. Robinson a very pleasant and accomplished hostess.

Our reception was most cordial and hospitable, and our visit very enjoyable. Mr. Israel is a very entertaining conversationalist, and his humorous anecdotes and pioneer experiences in California are very fascinating. A synopsis of his life, as nearly as I could gather, is about as follows:

Mr. Israel related to me that, being an Israelite, he came of a warlike race. All wars of the United States—the Revolutionary War, War of 1812, and the Mexican War—had a representative from his family. The late

Rebellion would have had, only the recruiting officer declared he would be killed, or run away in the first battle, and in either case a worthy citizen and most excellent soldier would be lost to the Union; therefore he was rejected, and the war prolonged at least two years.

He was born in that sooty, smoky city of Pittsburgh, Pa., Nov. 6, 1822. When quite young he went into a wholesale grocery and iron-house, and learned the business in all its details. He served under the same employer as office boy, packing clerk, shipping clerk, salesman, drummer, and collector throughout Western Pennsylvania, Ohio, West Virginia, and Illinois, until 1849, when he came to California. For two years he did some trading and mercantile business.

In 1851 he went into the mining business, but did not succeed. From thence he went to San Francisco, and was head manager for Adams & Morgan, contractors in filling in water lots. With 200 men under his supervision his salary was \$16.00 per day. In 1852 he went back to his old home in Pennsylvania, but came back to California the same year, remaining until 1856, again returning to his native heath. In 1872 or '73 he chanced to get hold of a leaflet of the infant *GLEANINGS IN BEE CULTURE*, which inoculated his system with the bee-fever microbe, which raged with unceasing fury. He described it to me as the worst spell of sickness he was ever called upon to endure. It raged night and day. He sent immediately to A. I. Root for a nucleus colony, and started on a small scale in the business.

Nothing of a startling nature developed from his efforts in Pennsylvania, and in 1882 he moved permanently to Escondido, Cal., to follow his chosen pursuit on a more extended scale. His brother had preceded him, and had fifty colonies of bees. He took charge of them and increased them to 101 colonies. This he did on shares, half the product and half the increase. In the spring of 1883 he moved them into the country, six miles from Escondido. This proved to be the driest year known in fifty, according to the old Spanish residents; and, through the rascality of a boy robbing them, and exciting the robbing fever, they dwindled down to 16 colonies.

The year 1884 was the reverse of the former one. More water fell during the months of February, March, and April, than had fallen during a whole winter in many preceding years. The sages and other honey-producing plants took on an enormous growth, and he increased them from 16 to 69 colonies, and harvested 10,592 pounds of comb honey in two-pound sections—an average of 662 pounds to the colony, spring count. This seems to be a big story, but Mr. Israel is willing to make affidavit to its truthfulness. Besides, there are three witnesses yet living who will testify to its correctness.

This I believe to be the largest yield of comb honey on record. An Australian, I believe, claims a yield of 700 pounds of extracted honey, which sinks into insignificance when compared with 662 pounds of comb.

Mr. Israel claims that he was merely a spectator, and had but little to do with it but to clear the way, prepare the room, and watch the honey come pouring down the mountain-side like an avalanche.

The supers held 87 pounds of honey, and they were piled three and four on a hive, thus making from 261 to 348 pounds each time they were filled.

Mr. Israel has recently sold his ranch, and moved to San Diego; but notwithstanding his 76 winters he is as hale, hearty, and active as if he were a score and a half years younger, and is determined to still follow his chosen pursuit.

Long may his "Skylarkian" products appear in GLEANINGS.

PLAIN SECTIONS.

A General Discussion of the Question.

BY DR. C. C. MILLER.

It's funny to stand and look on to see how a new thing is viewed by different ones. Smith hears of a new thing, and at once is jubilant over it — knows it's just the thing — "there's millions in it." Brown hears of it, and immediately knows to a dead certainty that the entire thing is all wrong, and will bring ruin to the whole business. Yet one knows as much about it as the other—just nothing at all. Perhaps you expect me to stand before your admiring gaze as the one shining exception—a man who can see all the merits and at the same time all the demerits. No, hardly. As I think over the past I can hardly pose as such a well-balanced, philosophic personage. Many and many a time I've thought over some new plan, perhaps of my own devising, perhaps not, and the more I thought over it the more I thought it was just the thing. Untaught by the lessons of the past I'd plunge headlong into the new scheme, not carefully trying it on a few colonies but on every colony in my possession, only to find the bees couldn't possibly be induced to look at things as I had looked at them. Why can't we be level-headed, anyway?

There's the matter of plain sections—according to some, good beyond belief: according to others, bad beyond redemption. I'm not going to enter into a full discussion of the good or bad qualities of the section in question; but I'm going to try to take somewhat middle ground this time. I'm not going to settle at once that it's the *ne plus ultra*, and fill all my supers with that kind this year (I have 24,000 of the old kind piled up in the shop ready to go on the hives now); neither am I going to settle that there's no possible chance that I'll ever care for them; but I mean to try them on a small scale this year, then I'll know whether to go into them more deeply another year.

The chief thing that concerns me is to know whether, in the long run, I'll make or lose money by them. Some tell me they'll cost more, some say less. I don't know which to believe. One tells me they'll bring the busi-

ness into disrepute, because the comb, coming so near to the wood, the grocer's fingers would pinch into the honey and set them to "bleeding." Do you know? I just swallowed that fallacy whole for a long time without recognizing that it *was* a fallacy. Suppose we look for a minute at the difference between the sections with insects and the plain sections. I use sections $1\frac{1}{8}$ wide, and the top of a section throughout the greater part of the length is just about the same as the top of a plain section, $1\frac{1}{2}$ inches. Now, are not my sections exactly the same at the top as the plain sections? Well, there's only one little difference, and I don't know whether that makes any difference in the thickness of the comb. The plain section has a fence that comes clear to the top of the section. My sections have a plain separator that lacks $\frac{1}{4}$ inch of coming to the top of the section, leaving $\frac{1}{8}$ inch at the upper part of the comb, without separator between the two sections. In actual practice I doubt whether that makes any difference; but if there *is* any difference, my sections with the insets must have the comb built out fuller than the other, so when you grasp one of them by the middle of the top-bar the old-style sections ought to bleed the worst.

But you say, "The old-style sections are not handled by the narrow part at the middle, but at the wider part near the corners." Are they? I put this question to one who had handled thousands of sections: "When you lift a section of honey, where do you take hold of it?" After a little hesitation the answer came, "I don't know." Isn't it just a little queer that one should do a thing thousands of times without being able to say just how it is done? That reminds me of the old lady who was up as a witness, and was asked how many windows there were in a certain house. She said she didn't know.

"And yet," said the magistrate, "you say you've passed it a great many times."

"Your Honor," replied the old lady, "can you tell how many steps you go up to the place where you are now sitting?"

He was obliged to answer in the negative.

"Begging your pardon," said she, "you can't tell whether it's four or five steps you've gone up day after day for years; so it be no great wonder an old woman can't tell twice that number when she's seen them only a few months."

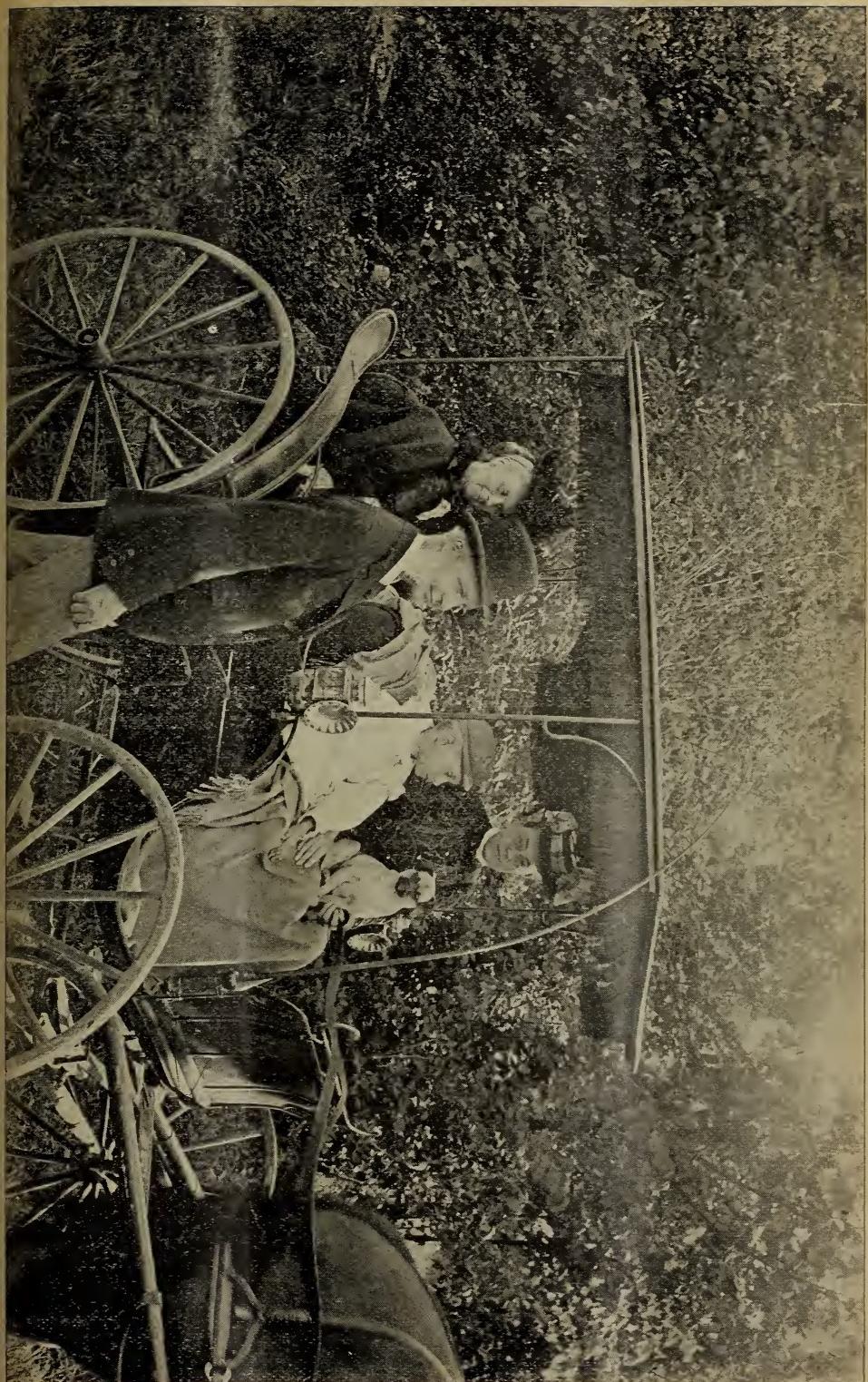
But, to return to the manner of handling the inset section. I said, "Stop and think. Do you take hold of the section by the narrow part at the middle, or at the wide part?"

"I think I handle it at the wide part."

I went and got a section of honey and held it out, saying:

"Now take hold of that section."

Without the least hesitation the section was lifted by the middle of the top bar, with the remark, "That's the way I handle a section." And, my highly esteemed friend who have been arguing that bleeding business to the detriment of the plain section, I'll risk my reputation as a guesser on the guess that *that* is the way you handle such a section, and that *that* is the way every grocer handles it; every



bee-keeper too. Why, when you lift the first section out of a super or a shipping-case, you just can't take hold of it in any other way; and, as a matter of fact, you can't very well handle any of them by the corner, and, what's more to the point, I'm pretty sure you don't.

Then there's the argument as to the expense of separators. I am glibly told that the fence will cost the least in the long run because the plain separator is thrown away after being used only a year, and the fence lasts for years. Looks all right on the face of it, doesn't it? Let's see. A fence separator costs more than a plain separator to begin with, and it takes one more than of the plain separators in each super—say! why in the world has no one yet sprung that argument, that it takes 20 per cent more fences than separators to go with eight-frame hives? You fellows who have been so down on fences have been rather careless, haven't you? Well, the first cost of the fence is more, and I don't know any reason why a good plain separator $\frac{1}{8}$ in. thick won't last just as long as a fence; and unless there's some way of cleaning fences that I don't know any thing about, it costs more to clean a fence than a plain separator. According to that the plain separator is the cheaper.

"Yes," you say, "but I thought you always threw away your plain separators after using them once, and the fence is used year after year."

"That's all very true, but I don't see that that makes any difference."

"Why, yes; it makes a big difference; for you buy the fence only once, and the plain separator must be bought every year."

Now look here. What's the use trying to make me mad? I've heard that sort of thing all I can stand. Those who use plain separators do not throw them away every year, and it doesn't change the thing if they did. A uses plain separators, and cleans them every year. B uses fences, and cleans them yearly. Plainly, A has the more economical plan of the two. Now, if I can do better than A by buying instead of cleaning, and A's plan beats B's, how under the sun can B's plan beat mine?

Now, if any of you have any sticking-plaster to patch up the bruises on that "bleeding" and that "cheaper" argument, suppose you produce 'em.

Marengo, Ill.

[This article was written some little time ago, but was mislaid. Possibly by this time the doctor has had experience covering certain points upon which he has doubts.

I believe the doctor once said he threw away his separators every year. Now, if he buys new ones I can not see but they cost a good deal more than fence separators that would have to be bought only once.

As to the question of cleaning, I think the doctor has a wrong notion. It is not necessary to scrape them all over their entire surfaces. All that needs to be scraped is the cross-cleats, or that portion of the fence that comes in contact with the section; and there are certain styles of fences that will have no cross-cleats, but knife-edge projections. These

can be used year after year without cleaning. Yes, doctor, it does make a difference whether the separator comes to the top of the section or not. I have some sections right before me now, in the crate, just as they came from the hive. In one lot the separators are even with the top of the sections, and in another lot they are $\frac{1}{4}$ inch down. In the last named there is a slight bulging of the combs near the tops of the sections; and in the former the faces of the combs are even, clear across the sections. When we adopted our fence separator I was decided upon one point—that it should come clear to the top of the section; for a slight bulging with plain sections would be intolerable.—ED.]

ERRATIC BEES.

BY MRS. L. HARRISON.

One day four swarms were in the air, flew around, and then returned to their hives, without clustering. Apparently they had not made up their mind what to do. Many other swarms issued, some clustering, others not, and returned to their hives. A few were hived, remaining an hour or so, and returned singly, and not in a body. After all this fuss and feathers we have but a few new colonies.

DIVIDING SWARMS.

One day a swarm issued and clustered. While there were yet bees in the air another came out and joined them, making a mass-meeting. They were put into a hive, apparently uniting peaceably. They soon came out and filled the portico, and when I looked into the hive it was full of bees.

I procured another hive, containing empty comb, placed it by the side of the one containing the swarm, and dipped the bees from the portico in front of it, driving them in with smoke. When I returned an hour or so later I found my bees had all returned to their first love.

About sundown I thought I would try again, and if I succeeded in getting the queens the rest would follow. It was plain that they had not united, but clustered separately. This time I slipped the cover of a wash-boiler very carefully under the bottom of the cluster, and took down a bunch with a big spoon, and put them before the other hive, driving them with a little smoke. I carefully removed them all. Early next morning I found that they had remained, and there were bees in front of the other hive hunting their queen, but they soon joined their comrades. Sometimes I've had swarms unite, and, when hived in a large hive, store a large amount of surplus; but oftener they swarm out the next day, and, some returning to their former home, others entering strange hives, causing a disturbance, and a part clustering, which was hived, only to have the same performance repeated another day.

THE SEASON.

Plenty of rain and flowers, but bees have barely made a living. There has been a basswood in bloom near me since the 26th of

June, and I've paid it many visits. Some seasons this tree would be full of large black flies, but there were none this year, and only occasionally a bee among the blossoms. We've no surplus honey to date, July 1.

SWEET CLOVER.

All gravelly knolls, vacant lots, and waste places have a luxuriant growth of this plant, just commencing to bloom. My attention was directed to bees working upon it to-day. The bloom is so small it must be a tiny drop that is secreted; but by the way bees visit them it must be secreted continuously. We've never had a large amount of surplus from sweet clover, but bees work upon it a long time.

FACED GOODS.

Let's have none, be it apples, potatoes, or honey. I bought fancy Ben Davis apples for a Christmas-tree in the South, and was char-

of the Lincs. County Council, and holds the first-class-expert certificate of the B. B. K. S., of which association he is a member. So keen an interest does Dr. Sharp take in all that pertains to bee-keeping, that a considerable portion of his spare time is devoted to the pursuit.

In response to our request Dr. Sharp writes as follows:

"The establishment of the apiary is of comparatively recent date. Five years ago as many hives were situated in my garden, near the house and close to the stable. But the situation was then most inconvenient, with growing crops all round, and work in the immediate vicinity of the hives often seriously impeded. At the end of that year, what was then a paddock was converted into an orchard, and dug over, and to the farthest end of which, under shelter of the hedge, the bees were then removed.



APIARY OF PERCY SHARP.—FROM BRITISH BEE JOURNAL.

grimed to find that they were only "faced." I was willing to pay the price for "fancy" for the whole package.

Peoria, Ill.

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of Percy Sharp.

The apiary shown in illustration is that of Dr. Percy Sharp, at Brant Broughton, Newark-on-Trent. Dr. Sharp is a well-known and prominent bee-keeper in his county, and also lectures on bee-keeping under the auspices of the Technical Instruction Committee

"Despite our good resolutions with regard to cleanliness about the apiary, time after time the weeds got the mastery, and we found it impossible, with other work on hand, to keep them cleared. Moreover, there was no proper path through the orchard, and the mud was awful. The discomforts endured when manipulating, too, were great — mud, dirt, and damp everywhere. Having endured this for some time, during which my apiary increased slowly but steadily, as did my knowledge of and delight in the pursuit, I determined to make a really good stand for the hives and a firm path leading to them. I obtained from an adjacent yard about ten loads

of waste and broken bricks; these were broken up, leaving, of course, the smaller pieces on the top.

"Along the end of the orchard a space was thus covered about 7 ft. wide; and down one side a path varying—owing to the irregularity of the hedge—from 4 ft. to 6 ft. wide.

"The whole was well rolled, and then, to prevent the weeds from growing through, this was sprinkled with boiling tar; and on the top of all was placed a layer of sand, and an edging of tiles round to prevent the pieces working out.

"The hives have stood, as depicted, on this path for a year now, and I have every reason to be well pleased with the result. During the past season hardly any weeds have had sufficient hardihood to penetrate the path, though, of course, some twitch grew in from the hedge-bottom at the rear edge. A further dressing of boiling tar and sand will, I hope, prevent this in future. Water drains rapidly away, and there is always cleanliness and order throughout; while any tool, small or large, accidentally dropped, is seen and recovered at once. As regards the hives themselves, they are of all shapes and patterns outside, but the frames and inside parts are interchangeable of course. There were at one time two styles of frames—broad-shouldered and metal-ended; the former are now, however, eliminated."—*British Bee Journal*.



QUEENS—HOW TO FIND.

Question.—Will you please tell me how I may know for a certainty whether a colony has a queen, and also how to find the queen if the colony has one? I hunted a colony all over to find the queen, and, finding none, concluded they were queenless; therefore I sent for a queen for them from a distance; and when I tried to introduce her, according to directions accompanying the shipping-cage, the bees killed her. Upon looking into the hive later on I found brood, so I presume they had a queen all the time.

Answer.—When settled warm weather comes in the spring, it is necessary, for the person who would be successful in bee-keeping, to know that each colony contains a prolific queen; for if a colony has no queen, or the queen in any colony should be old and failing, that colony could not be gotten in proper condition to take advantage of the honey-harvest. As the queen is mother of all the bees in a colony, she must be able to lay rapidly, so as to be able to increase the population of the hive; and if such a one is not in the hive she should be superseded by a better queen. As hinted at above, it often happens that the queen of the former season dies of old age during the winter or early spring, and in that case it is absolutely necessary that the apiarist know it,

else the colony will perish, for the old bees die off rapidly after they commence laboring in the spring, for old age is brought upon the bees sooner or later, according to the labor they perform. There is no other way of knowing to a certainty what is going on inside, than by opening the hive and inspecting all the frames. To know if there is a queen in the hive, inspect the combs; and if no eggs or small larvae are found in the bottom of any of the cells during April, May, June, July, August, or September, you can reasonably expect that such a colony is queenless, unless it be for from fifteen to twenty days after swarming; while if the eggs are few and scattered about, with vacant cells intervening, and without regularity, the queen is not as prolific as she should be.

To be absolutely sure that a colony is queenless (and you should be thus sure before you try to introduce a queen to it), take a frame of comb having eggs and some larvae in it, and put it into the center of the supposed queenless colony, leaving it undisturbed for three days. If queenless, queen-cells will be formed over some of the little larvae; and if no such cells are started, you can rest assured that they have something they are cherishing as a queen, which makes it unsafe to try to introduce another until such a "thing" is disposed of, for the new queen will surely be killed if introduction is tried.

To the accustomed eye of the practical apiarist, prolific queens are easily found, especially if the bees are of the Italian race; but a virgin queen, or an apology for a queen, is often very hard to find, even by an expert. To find a prolific queen, look for her between the hours of 9 A. M. and 3 P. M., on one of the two outside combs of the brood-nest; for it is my belief, after 25 years of practical observation, that most queens have a certain route (there are a few exceptions), which they go over every 24 hours, the queen being near the center of the brood-nest at midnight, when the temperature at the outside of the cluster of bees is coolest, and from there travels in her egg-laying toward the outside of the cluster till noon, when she commences to return, reaching the center again at midnight. The next day she does the same thing again, only going in an opposite direction, or toward the opposite side of the hive, which brings her on one of the two outside combs of brood, between the hours above mentioned.

Very early in the morning or late at night I rarely find a queen on either of the outside combs of brood, but midway between them and the center of the brood-nest, while at from 11 A. M. to 2 P. M. I find a queen on one of the outside combs of brood, nine times out of ten, providing the brood-nest is in a normal condition. If an empty comb is inserted anywhere in the brood-nest, the queen will be quite likely to be found on this comb 24 hours later; but in such a case the brood-nest would not be in a normal condition.

To find any queen, the best time to look is from 11 A. M. to 1 P. M., as at that time the most bees will be in the field and out of the way; and if your hives face south, as they

should, the sun will shine obliquely into the hive, and the light thus striking the combs will show you the queen much better than at any other time. If before noon, sit or stand with your face to the west; and if after noon, face east so that the sun shall not shine in your face, and so that you will be looking on the side of the combs where the rays of the sun strike. Always have a light box, the same size as your hive, with you; and when opening the hive, do it as carefully and with as little smoke as possible; for if you are careless, and jar the hive much in opening, the bees will "go for you;" while the queen becomes excited and runs about, often off her "egg-laying ground," into the corners of the hive; and if you have to smoke the bees very much, those of the hybrid and black variety will often so "stampede" about the combs and hive that our object will be thwarted at the outset.

Having opened the hive so carefully that the bees hardly know they have been disturbed, and as carefully removed the first frame on the side of the hive next to you, look it over for the queen, if there are bees enough on it so she might be there. Having satisfied yourself that the queen is not there, set the frame on the *further* side of the box from you, and take out the next from the hive, looking it over and setting it in the box as you did the first. You now have room so you can readily look down into the hive; and on taking out another frame, glance down the side of the next one in the hive, when the queen will often be seen in her attempt to run around to the opposite or dark side of the comb, especially if she is a virgin or black or hybrid, for such queens are usually very shy. If you do not see her, immediately look on the opposite side of the comb you hold in your hands, for she will be on one of these dark sides if anywhere. In this way keep on till she is found, or all the frames are in the box. Nineteen times out of twenty I find the queen in going through the hive like this, no matter what the queen, and whether laying or otherwise; and, if in the prolific part of the season, I do not usually have to lift over two or three frames to find her, if I keep in mind something of her whereabouts, as given above. But should the queen not be found I now commence putting the combs back in the hive; and by putting them in the box the way I told you, I can look at the "dark sides" of the combs as they come from the box, the same as I did when taking from the hive, and it is a very rare thing indeed that I fail entirely to find a queen in looking over the combs, either from the hive or from the box. If such a thing as a failure should occur, the hive is closed, and a trial is made some other day.

To show something what may be done, allow me to say that I went to the out apiary a few days ago and caged queens to prevent swarming, on the plan given in GLEANINGS a short time ago, and I made a record of ten an hour, with hives overflowing with bees, and supers to take off and adjust again.

But I will stop short here, lest the reader will say of me as Yelverton did of the preacher,

A tedious preacher had preached the assize sermon before Lord Yelverton. He came down, smiling, to his lordship after the service, and, expecting congratulations on his effort, asked, "Well, my lord, how did you like the sermon?"

"Oh! most wonderfully," replied Yelverton; "it was like the peace of God—it surpassed all understanding; and, like his mercy, I thought it was about to endure for ever."



RESTRICTED EGG-LAYING CAPACITY, AND SWARMING.

On page 466, June 15th issue, you publish an article on prevention of swarming. About ten years ago I tried the plan outlined, on a limited scale with ten-frame L. hives to produce comb honey. I confined the queen with zinc divisions on from two to five frames? My intention was to exchange these frames the queens were on with those from the other part of the hive when most of the brood was hatched. Every one of the colonies so treated swarmed within a week after being restricted. All methods of confining or restricting the queen have proved a failure with me. The successful bee-keeper of the future, who makes his living at producing comb honey, must produce it under "normal conditions," and he must and will be able to prevent increase, and control swarming, and this will be done without much extra labor. If the bees don't work according to your theory, reverse it. They are practical.

Normal, Ill.

H. W. FUNK.

[When you restricted the queen in her egg-laying capacity, that was where you made your mistake. The plan I spoke of contemplates giving the queen all the room she can occupy. Restricted brood-rearing, no matter how large the hive, is quite liable to induce swarming.—ED.]

A NEW WAY OF DETERMINING SPECIFIC GRAVITIES OF HONEY; ROYAL JELLY IN WORKER CELLS.

Dr. C. C. Miller:—To-day I was getting royal jelly from a hive four days queenless, to feed to grafted larvæ I found nearly 100 worker-cells half filled with royal jelly, and small larvæ ($1\frac{1}{2}$ days hatched) floating on it. Is it workers thus reared that give us fertile workers when hives become queenless?

Lately I had a glass tumbler $\frac{1}{4}$ full of white honey. I filled it up with dark amber sun-extracted honey. In a few hours the white honey was floating serenely on top. Then I filled my tumbler $\frac{3}{4}$ full of white honey, and poured two tablespoonfuls of dark amber on top of it. Next morning the amber formed a distinct stratum at the bottom. I suppose that, as water weighs about 8 lbs. to the gallon, and

good honey 12 lbs., when the sun extractor evaporates more water from it (also darkening it), its specific gravity becomes greater, and it sinks in common honey.

Why not use some 12-lb. honey mixed with some distinct coloring matter to place a little of it on top of samples of honey of which you wish to test its consistency? If the colored sinks to the bottom, we say it is below par.

Newhall, Cal., May 17. R. WILKIN.

[This letter, addressed to Dr. Miller, I gladly place before our readers. Royal jelly in worker-cells! I wonder how friend Wilkin knew it was such. The ordinary larval food in worker-cells and in queen-cells look and taste alike, but there is a chemical difference. If it is true that royal jelly may on occasion be put into worker-cells, that might account for laying workers.

Regarding the relative specific gravities of honey, I have seen in jars of extracted honey a layer of darker honey at the bottom, but I did not then suspect the cause. A honey of known specific gravity might be colored with aniline; and this could be used to determine the specific gravities of other honeys; but after all would not a gallon measure filled with honey, and weighed, show more quickly and more satisfactorily its real specific gravity?—ED.]

BEE-SPACES FOR COMB HONEY—WHAT IS THE EXACT MEASUREMENT?

Mr. E. R. Root.—I was surprised at your criticisms on my measurements of the bee-space between the comb and separator, as, before making the statement, I went to my honey-room and measured several combs to make sure I was right, and found that every one measured just $\frac{1}{8}$; and as this exactly corresponded with previous measurements, I thought the statement absolutely correct.

This morning I have been to my honey-room to measure again, and the very first comb I measured I found the space just $\frac{1}{4}$ inch. Could it be I had blundered? I kept on measuring. The second or third comb, I found the bee-space to be only $\frac{1}{6}$, and others all the way between these figures. The average, I think, was somewhere from $\frac{2}{9}$ to $\frac{3}{9}$. As but few of these combs were finished they were, perhaps, not as full as the average. Besides, they came from an out-apriary where the bees are mostly black, which may make a difference, and I have an impression that black bees do not fill their combs as full as Italians do.

J. E. CRANE.

Middlebury, Vt., May 6.

I feel quite sure I have made no error in measuring the bee-spaces in different lots of comb honey, coming as it did from all parts of the United States. As I stated in our issue for May 1, the bee-spaces varied all the way from about $\frac{1}{4}$ under to $\frac{1}{6}$ over $\frac{1}{4}$ inch. Nine out of every ten would run exactly $\frac{1}{4}$ inch. Dr. Miller wrote later that his bee-spaces ran $\frac{1}{4}$ inch.

I can account for your difference in measurement on the ground that the black bees fill out the combs a little fuller than the Ital-

ians. Some years ago some one else called attention, I think, to this very point as an argument in favor of the blacks. I wish some of our friends who have nothing but pure black bees would measure the bee-spaces in their comb-honey sections, and report the result. Let us see whether the black bees do give us fatter combs than the average hybrids and Italians.—ED.]



J. W. B., Ky..—If you have a virgin queen in the hive that won't lay, the best thing you can do is to pinch her head off. If the queen does not lay inside of a week or ten days, she probably never will lay, as there is something structurally wrong with her.

H. J. T., Ohio.—The hive to which you refer, 12 x 12 x 13, may be large enough to accommodate the swarm; but the great trouble with it is, it is not regular. You can buy standard Langstroth hives, something that is used almost universally all over the United States, for very much less money, and I would suggest that you try to get into the beaten track.

J. H. J., Pa..—It would not be practicable to move bees only fifty feet away at this time of year. If you desire to move colonies at all so short a distance it should be done in the intervening time between fall and spring; for instance, just after setting the bees out of the cellar to their summer stands. Of course, you can do something by moving the bees a little bit every day; but I would not advise attempting it.

F. M., Ind..—The black queen is at hand. By a mere inspection of her we could not tell why she does not lay. Possibly a man like Thos. Wm. Cowan or Prof. Cook might, by microscopical examination, detect something wrong with the ovaries. Queens very often fail to lay, and then the only thing to do is to replace them by one that can lay. Queens are so cheap now that it is penny wise and pound foolish to try to get along with a poor one.

C. S., Mo..—Without seeing a sample of the brood we could give you no definite information as to what the real trouble is. It may be a case of the real disease itself. I would refer you to the last paragraph or two on page 34 of catalog we are mailing you, for particulars regarding this disease. Should you send us a small sample of brood, be sure to wrap it carefully in cotton batting inside of a stout wooden box. A paper box would not do, as the package might break open and expose the disease to our bees here at Medina. The fact that you do not find any honey in the hive is nothing unusual this season. It may be that your bees have no honey to get anywhere; and it may be, also, that they are on the verge of starvation and that the brood is dying.



DOOLITTLE has given us some valuable suggestions on how to find the queen, elsewhere. He says that early in the morning the queen is in the center of the brood-nest; that from 11 to 2 o'clock he finds her on one of the outside combs of brood, nine times out of ten; but the best time to look for the queen is from 11 to 1. His article will bear a careful reading, and I should like to hear from others as to the best and shortest way to find her majesty. If it can not be done by machinery, what is the easiest way to do it with the eyes and fingers?

BEE CULTURE IN CUBA.

MR. O. O. POPPLETON, now of Stuart, Fla., and formerly of Cuba, has, it seems, been having showered at him a series of questions relative to bee-keeping on that island that just now seems to be the center of interest throughout the wide world. Mr. Poppleton writes us that his old eye trouble, which has been somewhat worse than usual, absolutely prevents him from answering letters fully enough to be of much value. Indeed, it is almost a physical impossibility to give them any attention whatever. After the war is over we may send Rambler or somebody else to write up bee-keeping in Cuba; for I have no doubt that American enterprise will do much to help develop the rich resources of that island now laid waste by the cruel hand of war.

THE WEIGHTS OF BEES, AND THE LOADS THEY CARRY.

IN the published proceedings of the eighth annual meeting of the Society for the Promotion of Agricultural Science, held at Detroit, Mich., I find on page 60 an account of an interesting series of experiments, over the name of C. P. Gillette. I omit the table, but the summary is given in the last paragraph.

According to the table there would be in a pound, on an average, 5578 unloaded worker bees; 3532 honey laden bees; 5060 pollen-bearing bees; 5447 unloaded pollen-bearers; 5394 idlers taken on the front of the hive; 2206 drones; 10,985 loads of honey; and 40,580 loads (the amount carried on both legs) of pollen.

These experiments are interesting as they confirm largely the work of others. They also show what is very interesting to me, that a worker bee may carry a weight of honey equal to its own weight, and that pollen loads do not usually run more than a tenth of the weight of the bees.

A MAMMOTH JUMBO SMOKER.

SOME little time ago we had an order for two smokers somewhat larger than the regular smokers on the market. They were to be regular jumbos, and in general specifications were to be the same as our regular Crane. After they were completed they were such mammoth affairs that I thought our readers would like to

see the relative differences in size. A regular standard smoker was set down on the table, and beside it one of the jumbos, and just back of it a boy twelve or fifteen years old. A photo was then taken, and the result is given below. We did not try the smokers, but have no doubt they would be a regular old Vesuvius, figuratively speaking.



I somewhat question, however, whether a smoker larger than the regular standard size, in the apiary at least, would be any better. No doubt it would give a tremendous volume of smoke; but it would be so big, awkward, and unwieldy, that the average bee-keeper would abandon it and take up his little light smoker that would give him plenty of smoke for an hour without filling.

THE LANGSTROTH MONUMENT — A SUGGESTION FROM P. H. ELWOOD.

SOME days ago I received a letter from Mr. Elwood, from which I make the following extract:

I notice what Doolittle says about the Langstroth monument. I am not in favor of costly monuments. Money can be put to better use in this world. I have just engaged a family monument for \$100, and think it enough. People are getting to be extravagant in burials. If in a place where many people pass, a fine monument for Langstroth would be appropriate; but his monument is the movable-frame hive.

Starkville, N. Y.

P. H. ELWOOD.

It is true that the Langstroth frame is and always will be a monument to his memory. I never shared the opinion, myself, that we ought to go in extravagantly on any thing of this kind. Something costing in the neighborhood of \$200, perhaps, has been about my idea of the expense that should be involved in the erection of a monument. If I am correct, we have scarcely \$100 in sight, even after all that has been written and said; and, with two or three exceptions, a bee-keeper from across the water has given more than any one else. Our American bee-keepers surely ought to be willing to give at least a little. Sums of 10, 15, or 25 cents, or even a dollar, would help greatly. But a lot of "ten centes" from ten

thousand bee-keepers would be a far better memorial than a few ten dollars from a few friends.

A large number of customers sometimes have an odd amount of change left in their favor after goods are paid for. We will gladly apply such amounts to the Langstroth fund whenever we receive instructions to do so. It is getting close on to the time when a monument should be selected and purchased, and therefore any funds that are to be sent in should be forthcoming at once. We stand ready to apply all 10 and 25 "centses" whenever so notified. It will cost you only a postal, and you will have a part in the recognition of the services rendered by a great and good man.

**A VISIT TO VERNON BURT; HOW HE GETS
COMB HONEY WHEN OTHERS DO NOT;
PLAIN SECTIONS A SUCCESS;
VALUE OF DEEP ENTRANCES.**

OWING to a great crowd of general work I was not able to get down to friend Burt's until yesterday, the 13th. You will remember that I reported in our last issue that he was getting a crop of honey when the rest of us around here were getting no surplus; that the secret lay in the fact that he had *fed* his colonies *à la* Boardman until the brood-nests were crammed full or sealed sugar syrup and sealed brood at the opening of the harvest. The nectar, when it did come, and what there was of it, went right into the sections.

About the size of hives, Mr. Burt now decides in favor of an eight-frame brood-nest, and a single one at that. He believes in strong colonies, just as I do; but as he carries on brood-rearing *intensively* on Boardman's plan he secures powerful colonies. Of course, they swarm, as that can not very well be prevented in a single brood-nest.

DEEP ENTRANCES.

Mr. Burt is an enthusiast on the subject of deep and wide entrances, this being the third season that he has tested them. He is very positive there is less swarming, little or no clustering out, and certainly freer ingress and egress of the bees. Said he, "Just watch the bees flying in at that entrance." I lay down on my side, with my face two feet away. While in this position Mr. Burt said, "There, you see the bees land inside of the hive two inches from the hive-front. Some of them, you notice, do not even alight on the bottom-board, but by a nice easy swoop they alight up between the frames above, and you will notice, too, how they take wing clear back along about the middle of the bottom-board when they go to the fields."

As the bees were coming in heavily laden with red clover, I had a nice opportunity to verify all his statements. Some of the deep entrances were after the Danzy pattern, and some after the Pettit idea, with wedges.

"How do you like Pettit's scheme?" I said.

"It is all right," he replied. "I have tested it for two seasons, and am satisfied that the bees complete the sections on the outside rows better than where no such plan is used. You will notice how the bees strike along by the

middle of the bottom-board, and that they walk either to the back end of the hive or the sides. This has a tendency to favor the outside rows of sections; and the practice is as good as the theory."

FENCES AND PLAIN SECTIONS A SUCCESS.

Mr. Burt was greatly pleased over the plain section. Said he, "You never introduced any thing that pleased me better than these. They crate well and look well." While I am writing these lines, the following is handed me, and I take pleasure in presenting it right here as it will speak for itself:

Mr. Editor:—We beg leave to report on those plain sections and fence separators. This spring we bought 35 supers of the Ideal kind, with plain sections and fence separators. They were bought as a trial, and put to a test, and we are pleased to say they have stood the test very satisfactorily. We ran several colonies with them at one of our out-aparies. The colonies were good average ones, as near like the other colonies at the apiary as possible. The bees went to work in the plain sections sooner than in the old style; and, would you believe it? up to the present time these colonies with the plain sections have produced twice as much as those with the old style. This is not guesswork, but facts, as careful records were kept, and we are ready to verify what we say. The only reason we can assign is that the plain sections and fence separators gave more perfect communication.

As to the character of the honey, we will say we did not have a single bulged or washboardy section. The honey came to about $\frac{1}{2}$ inch of the wood; and, coming so close, it made a pretty section of honey. It was advanced in the spring—that owing to the fact that the honey would come so close to the edge of the wood that it would be easier to get broken or bruised in handling than the old style. We thought the same; but after handling them filled with honey we must say that they are less apt to get broken in handling than the old style.

Hutto, Texas, June 11.

O. P. HYDE & SON.

Friend H. says his bees put twice as much honey in the new as in the old sections. This seems astounding; but in the generality of cases I do not suppose there will be anywhere near as much difference, and perhaps no difference will be noticed. Reports, with one exception, regarding the plain section, have all been favorable.

A POOR HONEY YEAR.

A. I. R. REMARKED this morning that this had been the poorest honey season he had known for many years. Reports seem to show that it comes as near being a *general* failure as any year we have ever known. But bee-keepers have had a remarkably good season in Vermont and Colorado; and we have received a few favorable reports from West Virginia and Northern California, and some from Wisconsin and Michigan. Clover generally has been a failure. Basswood has not begun to yield in proportion to the display of bloom. Peavine or red clover is yielding well wherever there is any. The bees were flying heavily at Mr. Burt's yesterday, and I notice they are going again in great droves over our factory buildings, probably from the same source.

Prices on comb honey, at least, should rule higher.

THOMAS WILLIAM COWAN.

SOME of our readers will remember that Mr. Thomas Wm. Cowan, Mrs. Cowan, and their son, an electrical engineer, have been sojourn-

ing in California for several months past for their health. The condition of all three has greatly improved. While Mr. Cowan, Jr., remains, Mr. and Mrs. Cowan left there a few weeks ago, stopping on their way at the homes of some of the bee-keepers of the United States. They called on Mr. York, of the *American Bee Journal*, and on Dr. C. C. Miller. In writing to Dr. Miller recently I mentioned the fact that I was enjoying a visit from Mr. and Mrs. Cowan; and in reply he writes this, which I give to our readers :

Dear Ernest:—I congratulate you heartily on the opportunity of a visit from Mr. Cowan and his wife. I do so with some intelligence after having enjoyed the treat myself. They came just at a time when work was in such shape that I couldn't stop for anybody—just couldn't stop. But I did stop for three days, and gave myself up to the abandon of thinking there was no work to be done while they were here; and although it may take two weeks to catch up, I'm not worrying over it.

Along with a strong desire there was also just a shade of dread of the coming of two such prominent people; but they brought with them a large stock of common sense and loving kindness, and immediately we were at ease. Mr. Cowan impresses one as a man with a wonderful fund of information, but who has hardly discovered yet that he is any better off in that respect than the ordinary mortal. It so happened that while he was here, I had sent me a letter and a newspaper clipping in a foreign language. I didn't even know what was the language—thought by the looks of the printed part that possibly it might be modern Greek. But Mr. Cowan read it off at sight. It was Russian. It made me feel I'd like to begin life over again and be a linguist.

Mrs. Cowan is so simple and unassuming in her manners that just at first one is hardly ready to recognize in her a woman of unusual intellectual attainments; but gradually the fact appears: and, along with very clear perceptions of the truth, she is possessed with an intense zeal that others shall see the truth as she has learned to see it. My wife, who had more opportunity than I to become acquainted with her, gave as her verdict, "Mrs. Cowan is a woman that lives to do good."

The present war seems bringing closer together a good many people. At its close there will be no gap between the North and the South; and England and America, mother and daughter, will be closer than ever before. "We be brethren." C. C. MILLER.

Marengo, Ill., June 13, 1898.

The doctor's impressions of the two were exactly my own—in fact, of all Rootdom. Notwithstanding Mr. Cowan is the most talented and best informed bee-keeper living to-day, I believe, having traveled over nearly all of the civilized world; notwithstanding he reads eleven different languages, and speaks perhaps half as many; notwithstanding honors of various kinds have been conferred upon him by different societies for the advancement of science; notwithstanding he is editor of the *British Bee Journal*, and president of the British Bee-keepers' Association, he is one of the most modest men I ever met. Unassuming and quiet in his manner, one can not fail to be impressed that he is in the presence of a master of our pursuit.

Without doubt he has the most extensive library relating to bees of any man in the world. He has been all his life gathering together rare and old volumes pertaining to bees; and it does not make any difference what language they are printed in, he reads them just the same. He pronounced some of the bee-books we have, dating back two and three centuries, as being exceedingly rare and valuable—such as, for instance, Butler's Fem-

inine Monarchy, printed in 1609, or two years before the publication of the common version of the Bible; also Hill's treatise on bees, printed in London in 1608.

When Mr. Cowan was here in 1887 he had with him his big microscope with which he has made some of his exhaustive researches. This instrument is one of the finest in the world, and was made by Mr. Cowan himself. Father once pronounced it the finest piece of handwork he ever saw. It is described on page 715 of this journal for 1887.

I found Mr. Cowan to be well versed in all the modern and ancient practices of bee-keeping. It seemed to amuse him that so many ideas were being discovered in these latter days that have been fully described in former works. For instance, the modern starvation cure for foul brood is fully described in Della Rocca's works, written over a century ago, and printed in 1790. He was also amused at the way we Yankees have of inventing things that his countrymen invented and afterward discarded.

On the afternoon of one of the days he was here, Mr. and Mrs. Cowan, Mrs. Root, Master Leland, and myself, took a drive down to our basswood apiary. I felt that, when so distinguished a personage was here, I must not fail to take along my camera, and so I requested the privilege of a "shot" or two, which was kindly granted; and I also asked if I might present the result of that shot to our readers. With some reservation this privilege was also granted. Mrs. Cowan is shown in the back of the buggy, Mrs. Root in front, holding the dog Trix; and Master Leland in front of Mrs. R. In the background are the basswoods. From the picture one would think it impossible to go between the trees, but such is not the case. Of course, we do not need to point out Mr. Cowan.

Mrs. Cowan is as simple and unassuming in her manners as her husband; and the fact gradually begins to dawn on one, when he begins to know her better, that she is a woman of more than usual intellectual attainments, as Dr. Miller well says. She is a very earnest and able advocate of the doctrine that the ten tribes of Israel, after their carrying away to Assyria, 133 years before the sacking of Jerusalem (when Judah and Benjamin were taken to Babylon), were not lost by absorption into other nations. She claims that the Bible justifies us in believing that these Israelites migrated to Central Europe and became the Anglo-Saxon nation; that England is Ephraim in prophecy, and the United States represents Manasseh; that the religion and principles of these two nations will spread all over the world and become dominant.

It is not necessary for me to refer to the members of my own family unless it is to the dog Trix (I count her) that eats more honey than any other canine living. The other day she showed she was very fond of raw bananas and raw tomatoes; and for taffy she has a "sweet tooth." I have not tried her yet on a chunk of comb honey, but I have no doubt she would whine for that as she does for every thing else in the sweet line.



BIOGRAPHICAL SKETCH OF W. K. MORRISON.

Mr. Morrison is a Scotchman by birth. He kept bees to some extent in Scotland before coming to the United States, and had bees when eight years old. He left Scotland when 17 years of age. He has always been of a rambling disposition, and an enthusiastic traveler. His first stop in the United States was at Pittsburgh. Later he settled down at Bellaire, Belmont Co., Ohio, where he followed bee-keeping for about four years; and although he was right on the line of a railway that runs through Medina, for some unknown reason he never got around to make a call at the Home of the Honey bees. After leaving Bellaire he went to Baltimore and then to other points in Maryland. Finally he got into business in a canning-factory in Greensboro, Md., where he stayed one year. Then he went to Port Royal, S. C.



W. K. MORRISON.

During these early years he spent most of the time in experimenting with things he was curious about. He finally "fetched up" at Charleston, just in time to be on hand for the earthquake; and from the conversation I had with him I think his appetite for the curious and wonderful was pretty well satisfied for a time. He says he looked down into the crevices and chasms made by the earthquake, and stayed there (as book-keeper of the Charleston Bagging Mfg. Co.) studying the matter, not only till the earthquake was all over, but until the ill-fated city was pretty well fixed up and put in running order again. Then, being curious about Florida, he visited our friend W. S. Hart, and also stopped for a

time at Daytona, Fla. From Daytona he walked through the woods across the unbroken wilderness over to the west side. After staying one winter in Florida he was back again in Charleston. Of course, it needed some means to do so much traveling; and, if I am correct, the money he had brought with him from the old country (besides a good deal he earned in Charleston) began to run short; but he had such an intense longing to see the great West that he procured a stereopticon and began to give lectures on scientific subjects. My talk with him brought vividly to mind the time when the writer was traveling about and seeing the world, and paying his way by giving lectures, or, rather, familiar talks, on chemistry and electricity. With the stereopticon and the lectures he made his way to Denver, Col., and while there he became interested in galena-mining. He became a student at the State School of Mines. In the pursuit of these studies he was employed by the railroad company to visit various mines, and the State afterward paid his expenses while he went about giving lectures on chemistry, especially that part of chemistry that properly belongs to geology and agriculture. These studies seem to have turned his attention again to the head of our nation, for we find him back in Washington, D. C., in a book-shop and printing-office. While there he became acquainted with many well-known public officials. Most of you will remember Nellie L. Rossiter's little book on the care of silkworms. Mr. Morrison thinks more than \$20,000 was wasted by the government in trying to develop the silk industry. My opinion is, however, that, if they never waste money in a worse way than that, they will do pretty well.

While at Washington he became intimately acquainted with Senator Teller, Secretary Rusk, Senator Plumb, and others. As he still held on to his interest in bee culture, at an opportune time, as it seemed to him, he was permitted to urge that an appropriation of \$5000 be made for the benefit of bee culture in the United States, and he was successful in securing this appropriation. Prof. Cook took hold of it about a year after the money was given, and I do not know but friend Cook had the credit of it, although Mr. Morrison, if I am correct, was the first mover in the matter, and the one who finally secured the enactment *

When in Washington he became acquainted with the ambassador from Venezuela, Nicolas Bolet Peraza, and finally succeeded in securing an appointment as apiarist to the United States of Venezuela. He accordingly left the United States and spent one year in Venezuela in trying to introduce improved bee culture in that part of South America. The disturb-

* Friend Morrison, in reviewing this biographical sketch, adds here the following footnote, and also the others appended to this sketch.—A. I. R.

Besides myself and the secretary, no one knew, Dr. Tinker was the first to know. Secretary Rusk pledged the Senate Committee not to spend money on the study of wild bees, but to put the money to practical purposes. Prof. Riley did not like this. Secretary Rusk also pledged himself in writing that I should be the first appointee.—W. K. M.

ed state of affairs in Venezuela at that time, however, prevented his getting his pay for his services, and that caused him to give it up. During this time he investigated very thoroughly the stingless bees of the tropics, and wrote them up better than they had been before. These stingless bees do actually gather honey enough so it is an article of commerce. He said about three to four pounds from a nest was, however, about as much as he had ever secured.

From Venezuela Mr. Morrison went all through the West Indies, traveling over Cuba, Jamaica, Hayti, Trinidad, and nobody knows how many other islands. From the West Indies, for some unknown reason he took a sudden fancy to go to California.[†] Then for the third time he swung back to Charleston, S. C. Then a desire seized him to see the metropolis of the New World, and we find him establishing an apiary on the roof of the building where he was staying in New York; and I believe one of our bee-journals has given an account of the apiary that was kept for over a year on the housetop with tolerable success in the heart of the great city, said apiary consisting of over 50 colonies. Finally he became somewhat disgusted with the Yankees and their ways of doing things.[‡] Now, he did not tell me that, but I rather guess it; and, to tell the truth, I myself, although a Yankee to the very backbone, have been, especially in traveling, considerably displeased several times at some of the ways we Yankees have of doing things. I do not mean by this that there are any better people in the world, all things considered; but I do think that the Yankees might learn some things of other nations as well as having other nations learn things of us,[§] to our mutual advantage. Friend Morrison finally took his fifty colonies of bees down from the housetops and moved them to Bermuda about three years ago, and has been there ever since. Not a colony was lost, and scarcely a bee was lost, although he made the trip in the middle of the winter. He gave as a reason for prolonging his stay in Bermuda that his health has been better there than ever before at any other place in all his travels. True to his instincts he has succeeded in getting a sort of experiment station established on the island, without so much as "thank you." During his travels he has contributed at different times to the *American Agriculturist*, *Rural New-Yorker*, *News and Courier*, *Charleston*, and various other journals. He visited England and Ireland before he was 17 years old. His studies have given him a deep insight into entomology, botany, horticulture, biography, and government. He can tell you how public affairs are managed by almost every nation on the face of the

[†]I was in New Orleans when the Italians were lynched.

[‡]Several doctors advised me to leave on account of the malaria in my system, my own desire being to live in the West Indies, especially the island of Grenada — the spice island; but I had to come here where there is no malaria. A cold climate does not agree with me at all; my system is apparently too sensitive. I liked Washington, except its climate.

[§]All other nations are in the same fix, I am afraid.

earth; and when it comes to botany and horticulture he shows a wonderful familiarity with almost all rare and costly plants found in different parts of the earth. Perhaps the island of Bermuda gives a larger number of specimens than almost any other place; and especially are there more curious plants grouped there in a small area than almost anywhere else.* I fear that friend Morrison, like many another capable man, is lessening his opportunities for good by giving way to that restless disposition of his that prompts him to be so constantly moving about.



I would rather be a doorkeeper in the house of my God than to dwell in the tents of wickedness.—PSALM 84:10.

In my talk thus far in regard to Bermuda I have mentioned only the pleasant features of the trip, and have, at least in some instances, refrained from finding fault or from telling of disagreeable things; and so far as Bermuda is concerned, and the people who live in Bermuda, I shall have nothing to complain of. The principal thing I saw to find fault with was with our own American people on the island and on the boat, especially with the way in which the rich and fashionable—the stylish people, if you choose—behave at vacation time. Somebody may say, "Well, Bro. Root, why not have *your* own vacation after your fashion, and let the millionaires do likewise after their own fashion?" To this I would heartily say, "All right." But, hold on a bit. In taking my vacation after my own fashion, I am sure I did not inconvenience anybody else—at least, I took very great care that I might not do so. Perhaps the trouble is I am not built for fashionable society and wealth. If so, then I thank God again that, in the language of our text, I am not at all at home in the tents of wickedness. I believe there is a reform coming in methods of travel. On the Pullman train running between New York and Chicago I found a Pullman without any smoking-room attached. You might go all through the car, in and out, and not find a scent of tobacco about it. But there was a special car fitted up for the convenience of tobacco-users. If I am correct, the W. C. T. U. has had something to do with banishing smoking entirely from cars made especially for the use of ladies.

On steamers, however, there is almost no escaping the fumes of tobacco. Of course, you might go down into the ladies' cabin; but when one is seasick he wants the open air if he ever does in his life, and he does not want a heated cabin. You suggest the stateroom. Well, when I lay down in my upper berth, with the port-hole (or bullseye) wide open so the wind could blow right in, I was for a time

* This is a mistake. The West Indies are greatly superior.

comparatively happy; but every little while some vigorous tobacco-smoker would lean over the rail in front of my cabin, and puff a great lot of smoke so the wind caught it and brought it right through my little window, full into my face. I think no one can imagine the torture of the sickening fumes of tobacco when he is seasick until he has been through it. In vain I sought a place, when I felt a little better, in the open air, where I could be free from tobacco smoke. Somebody would push in ahead of me and send out a great stream of smoke with filth and poison enough in it to sicken a whole crowd of people. You may say these were exceptional persons; but I declare I looked almost in vain to find a man on board our steamer who did not use tobacco. On the first day of the trip I began to feel lonely, and was questioning to myself

meal they ate as much as (and perhaps more than) an ordinary laboring man gets for a day's wages. Perhaps they can afford to dress every day in a suit of clothes costing more money than many earn in a whole year. I will try to think that that is their affair and not mine; but I pray that my lot may always be cast with the meek and lowly—that is, with those who love righteousness and hate iniquity. Now, please do not understand me, dear friends, by thinking that I condemn every one who handles great wealth. God forbid. We have millionaires who are temperate and pure in heart, who are hungering and thirsting after righteousness, and who are humble and moderate in their ways of living, as well as many poor people.

With this preface you need not think it strange that I passed by all of the large hotels,



MY BERMUDA HOME, AND SOME OF MY ACQUAINTANCES THERE.

whether I should be able to pick out a Christian man by his looks and deportment. I found one whom I thought to be such a man. He did not use tobacco, nor smell of tobacco, and had a kindly and benevolent look. After we became acquainted he and I had quite a laugh over it. He had been nearly all his life a book-keeper for the American Bible Society, and he remembered me and our annual contributions to the work.

After reaching Bermuda I found the occupants of most of these big hotels were of the class who smoke almost constantly, use wine at the table, drink freely from various bottles between times, play cards, sneer at pious people, and—God forbid that I should go any further with my enumeration. I do not feel at home with such people. I can *not* feel at home with them. Very likely they had money enough so they could well afford to pay for every

and, in fact, the large boarding-houses; and it gives me pleasure just now to give you a little glimpse of my home in Bermuda, and some of my little and big friends.

On the right of the picture is friend Morrison, of whom I have told you a good deal. His light summer clothing is just the same that he wore in the middle of February, when he and I had such times wheeling it over the island. The dog with its head near his foot is the one that ran out on top of the fence, and barks when people come along. The curly-headed little chap with his arm resting on the dog is one of the triplets. The two little girls look so much alike that I wonder how their own mother knows one from the other; and the three all together are about as bright and pretty children as you ever saw. The fourth child is an exceedingly lovable little puss. In fact, they have nick-named her "Puss,"

and she is one of the sweetest little darlings I ever met in any part of the world. The lady right behind her, sitting in the chair, is Miss Corning. The girl at the left is my little Portuguese friend of whom I told you in a former paper. The lady back of the triplets, if I am not mistaken, is their mother, Mrs. Baker. They have a beautiful home near by. The broken tree right by the door is an oleander. I have told you before that oleanders grow wild all over the island, and make thickets of tall trees in many places. You will notice the window-blinds are hung at the top and swing out at the bottom. This is to admit air, and at the same time keep out the sun. I think it is an excellent fashion, and I do not see why we can not have them thus in our country. The window back of Miss Corning opens into the room I occupied; and as I look at it I can recall every bit of the furniture, and think of the refreshing naps I used to have there every forenoon just before dinnertime. The window right back of friend Morrison opens into the pretty room where we had our Sunday-school every Sunday afternoon. All of the people you see were gathered there, and perhaps nearly a dozen others. Miss Corning has quite a pretty little organ; and after the Sunday-school she played while friend Morrison and others sang beautiful hymns, sometimes taking the book and singing snatches here and there almost all the way through. Dear friends, you can not imagine what a great and refreshing contrast this way of spending the Sabbath is from the Sabbath of fashionable life, with its tobacco smoke, drink, cards, and, too often, the accompanying sneers at temperance, purity, and every thing that we regard as pure and holy. Give me the humble cottage, the pure and holy lives, with the Bible and the hymn-books and God's sacred altar kept sacred, not only Sundays, but on every day in the week.

As I write these words a struggle is going on in our nation in regard to the matter of stimulants and intoxicants in our army and navy during this war time. I am told that intoxicating liquors of every kind have been rigidly excluded from every American battleship. The commanders have decided that, if we are to excel in the use of modern artillery, the men must be entirely free from the use of stimulants. May God be praised if this thing is indeed true. But our soldiers on land are certainly a great way off from this as yet. A new plan of getting the soldiers to drink beer, that has recently been inaugurated, is called the "canteen station;" and we are told that breweries are running day and night, producing carloads of beer to supply the demand among the soldiers, and that the discipline is so loose or ricketty that boys from Christian homes, who never tasted beer before, and never thought of tasting it, are fast learning the habit under the protection (and some say encouragement) of the United States army. If it be true that men can not fight on board a ship with intoxicants crazing their brains, why does not the same thing hold true on land as well? One of the newspapers suggests that the reason why the Spanish fleet at Santiago

did little or nothing in its own defense was because the officers of the ships had given all of their own wine to the sailors to make them fight better before going into action.

At our prayer-meeting last Saturday afternoon the statement was made that the entire railroad system of the United States had decided not only to refuse to employ a man who is intemperate, but that the different companies had agreed to go so far as to dismiss every employee found patronizing saloons. If this is true, we may say again, "May God be praised!" Now, it seems to me that it would be going but a step further for the roads to declare that they will no longer carry beer, especially if they are satisfied that they can not afford to keep a man in their employ who uses it.



GROWING WHEAT ON "HIGH PRESSURE."

My high-pressure gardening for the present season has taken a little different turn. Perhaps I have not told our readers before, but we have not been running our wagon around town with honey, fruit, vegetables, etc., since last Christmas. There were several reasons why it was discontinued after having been kept going regularly, winter and summer, for almost a dozen years. In the first place, I felt the need of less care and responsibility; and to grow garden-stuff, especially on high pressure, requires careful planning and oversight, both early and late. Another thing, I have so completely filled the field for the past ten years or more that other people who raise garden-stuff complain that I have so well supplied the town that there is no market for any thing. Let me remark right here, however, that, even though I gave notice far and wide that I was not going to supply the town with vegetables any more, nobody else has occupied the field to any extent. It is true, there are people who go about town with surplus occasionally, but no one makes regular trips all over town every other day, as we used to do. I love the business, and I think it not only a very pleasant but fascinating way of making a living, to grow garden-stuff, fruits, and berries, and hand them over fresh to the consumers. By the way, I do not know but I have educated our Medina people up to a pretty high notch in some respects. For instance, we often hear the remark, "I want so and so, providing it came right from the garden to-day. I do not want any thing that was gathered yesterday." Now, some people advocate selling your stuff to the grocers, and letting them do the retailing; but let me ask such to tell me how often they can get stuff that wasn't "gathered yesterday," to say nothing about the day before, or *several* days ago. I heartily believe in having the producer meet the consumer. Learn by practice how much stuff you will probably sell of each variety every day, and manage so as to

get home with an empty wagon, or nearly so ; then start out next morning with every thing fresh, right from the garden.

Well, after deciding not to run the garden any more, but to grow stuff only for our lunch-room, or dining-table rather (for the dinner-table in the factory has not yet been given up), we found a good many acres of ground underdrained and heavily manured that was not going to be occupied. Mrs. Root suggested that I should raise hay. A clover-field looks very pretty, and it is not very much work, except at haying time. In our market-gardening we have cultivated something like twelve or fifteen acres. We have this year, perhaps, five or six acres of potatoes, for I am still a potato-man. What shall be done with the rest of the six or eight acres? In order to get it into clover I decided to grow wheat *a la Terry*. We accordingly prepared and fitted all our vacant ground, after potatoes were dug last season, for wheat, of which I proceeded to grow my first crop. I was pretty sure I could grow wheat, although I knew the consequence of putting wheat on ground so heavily manured for years past. Several good farmers suggested that, if I would use the right kind of phosphate, it would strengthen the straw and make it stand up. But, was not my wheat handsome all last fall, all winter, and all this past spring? Men who had farmed all their lives would frequently say, "Why, I never before saw such a pretty piece of wheat in my life — it is so rank and luxuriant! There are no thin spots anywhere." Well, I never believed in "thin spots" in raising a crop of any kind. If there was a piece of poor ground, there is where I massed my artillery to make it come up to or make it go ahead of the rest.

Well, the wheat began to head out; and just about the time it was heading out, the market price was "heading" somewhere toward \$2.00 a bushel. Of course, there were many shakes of the head from veteran tillers of the soil. They said it would fall down in spite of me. I used to remark, "If my wheat and the price both keep up, it will be about the best market-gardening I ever did." My wheat stood up pretty well until the great long heads began to get heavy with grain. They then bent over and hung down gracefully; and the dry spell we were having seemed rather to favor my wheat enterprise; but whenever we had a rain, and the heads got wet, a good many of them would go down. But you know I am always hopeful, and the wheat seemed to catch my spirit, for it would bend down gracefully, and then get up again; but as the heads became heavier, and as we had a thunder-storm or two with considerable of a blow, the heavy grain pulled it down and held down a great part of it.

Everybody inquired how I was going to harvest it, and I inquired rather anxiously myself. I finally heard of a certain man who had a low-down Deering Pony binder, and he said he had never seen a piece of wheat yet that he could not cut. He was hopeful, like myself; but when it took him, with an assistant, two days and a half to harvest less than ten acres, he rather admitted, or submitted,

that it was the worst wheat to cut he had ever come across. But, was there not a pile of straw and grain to be shocked up? Why, the shocks make one think of a little village where the houses are so close together the neighbors can shake hands out of the windows all round. I do not know how many bushels we are going to get to the acre. I will let you know after thrashing. We managed to get it shocked up a little before it was dry enough to shell out, and we have not been bothered by any storms. But I tell you there was lots of hard work about it. We tried cutting about an acre that was down the worst, by hand; but I found it was going to cost me about \$3.00 an acre to do the cutting and binding. The man with the Pony binder says he cuts wheat for 50 cents an acre if a team is furnished; but with the amount of grain on our land, the twine, which must be purchased if we use the machine, costs another 50 cents. Then there were so many places where the crop was so heavy that the binder could not handle it all, it cost fully \$1.50 to harvest it and set it up, even with the machine.

Unfortunately, the Pony binder was not in the best kind of repair—that is, the revolving aprons were not; and we had to stop the first day and telephone for a new apron. They did not send the right one, so we were obliged to patch up the old one. Now, our experience in this line illustrates a point in business that I have tried to make plain a good many times. The owner of the machine should have measured his apron, and described it so there could be no mistake; then he should have gone to the telephone and either made his order or listened while it was being made.

You may say, "Why, can't you trust a regular business man to do business?" My experience has been a thousand times to the effect that you can *not* trust an ordinary business man to do business unless you watch him and see he does it right. This may be a little hard on some of our friends, but it is too often true. If you are in a critical position, and much depends upon there being no sort of mistake or misunderstanding, keep your eye and ear on every detail of the business, from beginning to end. Let me give another bit of experience in that wheatfield.

When the owner decided he would have to mend the old blanket, and go ahead the best he could, I felt pretty sure I had better watch him all the way through, although I was needed very much in another direction. There were two men, two boys, and three horses that would soon be at a standstill. He thought it would take twenty minutes. I said it would take an hour. It took an hour and ten minutes; and if I had not given it my personal supervision I do not know how much longer it might have taken. The owner of the machine went up to the factory and got the material he needed. He wanted to fasten the heavy canvas to some strips of wood. As soon as I saw him driving the small-headed wire nails through the canvas I told him the heads would pull out quicker than he could drive them in. I suggested that some strips of leather be laid down first before driving the

nails. He agreed that that would be an excellent idea. When I told him he needed some large-headed tacks he said he did go up to the factory, and we hadn't any on the premises. This was down in the field. I jumped on the wheel, and was soon in the counter store, asking for large-headed carpet-tacks.

"Haven't any."

We are closing out our department store a good deal as we are closing out the garden business. Then I went up to one of our rooms, and asked for tacks. They, too, declared they had nothing but some very small tinned tacks. But I was getting in earnest by that time. Said I, "But you certainly have something in this establishment to fasten canvas or like material to wood better than these slender small-headed wire nails."

"Oh, yes! we have some double-pointed tacks."

Then he showed me a kegful right under his hand. I grabbed a handful, and was down in the field by the side of the binder man, "in a jiffy." I tumbled them on to the canvas where he had been putting in his little nails.

"Well, I declare! Now you have hit it to a dot."

Then he proceeded to put the double-pointed tacks, or staples, along the leather strip right over where he had been putting the wire nails. After he got through he admitted that they would stand the strain of that tremendous crop of wheat tumbled about toward all points of the compass; and after we had got the apron in place I called his attention to the fact that the double-pointed tacks I brought him were exactly the thing the manufacturers used when they made the apron in the first place. With their help we finished the wheat harvest in pretty fair shape, but it took us nearly all the forenoon of the Fourth of July. The machine was engaged, so there was no other day in which he could complete the work for me. Now let me point a moral right here:

While people oftentimes talk too much (that is, certain people do; but, mind you, I am not now thinking of women at all—at least I am trying not to think of them), there is a good deal of sorrow and trouble in this world because people do not talk enough. My good friend did not talk enough or emphatically enough when he ordered the new apron. Then when he went after the tacks, and they told him they had none, he did not explain to them that he wanted them to hold heavy canvas very securely to strips of wood. And, by the way, when you go to a hardware store for something, it is an excellent plan to explain to the clerk or proprietor just what you want to do. If he knows what you have in mind he can often fit you out with something that will do just what you want done, very much better than you dreamed of doing it. There are great improvements along all the lines of hardware; and lots of people do not even know of the handy short cuts that are to be had for an almost insignificant amount of money. Study up thoroughly the work of the day. Look out for breaks that are likely to occur, and have things on hand, as far as

possible, to anticipate emergencies. It is a rather expensive piece of business, I assure you, to have a machine break down in harvest time, when a lot of expensive men have to sit down in the shade and await repairs.

I noticed in the *Ohio Farmer* that W. I. Chamberlain has had some trouble from wheat falling down. He suggests using chemical fertilizers instead of stable manure to obviate this very thing. But I tell you I am somewhat in doubt as to whether chemicals will give the crop of luxuriant grain that comes from stable manure and thorough underdraining. By the way, I had a piece of ground on the creek bottom where chickweed got in. It probably came in with the manure. I tried growing potatoes with clean culture to get out the chickweed; but the chickweed would grow so fast I began to get a little alarmed. This heavy crop of wheat, however, so completely snowed under the chickweed that at present writing there is not a spear of it in sight. It may come later but I am determined to get rid of it, even if I have to work as hard as I did with the Canada thistles. The man who drives the team, and who put in the wheat, suggests that I grow wheat again on the same ground, without any more fertilizer. By the way, it is rare fun to harvest wheat with modern machinery when it stands up straight. We had perhaps an acre that was put in after late potatoes. This stood up perfectly. I think the machine would easily cut an acre an hour, with three horses. Every bundle was neatly bound, and there was scarcely a head of wheat wasted; but where it was tumbled down so, and we had such a mess of it, the ground was literally covered with plump heads of grain, and much of it is down between the stubble, so I presume it can never be saved.

ELECTRICAL TRANSMISSION.

A Peep into the Philosophy of Dynamos and Electric Motors.

BY A. I. ROOT.

In mechanics there are two principal methods of transmitting power; namely, by belting and by gearing. Belting is in more common use because there is less friction and less rattling and clanking. But belts almost always slip, more or less, and in slipping there is always a loss of power. Gearing never slips unless it is so exceedingly defective and out of shape that one cog slips by another; hence the expression, "slipping a cog." Gearing is always used for clock and watch work, because in measuring time we must have positive and absolute transmission. The chain-and-sprocket wheels, such as are used in bicycles, are a sort of compromise between belts and gear wheels. Their transmission is positive, and of late the chain and sprocket are used considerably in slow-working machinery. For rapid work—buzz-saws and the like—the chain is not in much favor. If it should break it would be more likely to kill people than the belt, and, if I am correct, the friction

would be rather more, without expensive lubrication. Boys and girls who run bicycles know how often their chains need lubricating in this way.

Now, within a short time a new method of transmitting power, called "electrical transmission," has come to the front. Without doubt you have all seen dynamos. They are generally run by a steam-engine. Well, a dynamo may be in one building, and the machine propelled may be quite a distance away; but the power may be conveyed by just two little copper wires. As an experiment, our whole machine-shop was run with full power recently by two little wires no thicker than a common brass pin; and while I write, a little bit of motor, not much larger than a good-sized watermelon, is working a pump down on the creek bottom, 600 feet distant, that supplies soft water for our whole establishment—in fact, for the whole neighborhood. Now comes in the wonderful fact that caused me to talk with you about electric transmission.

When these little wires carry the power, do they carry it like a belt so that some of it may be lost by slipping, or are they absolute and positive, like cogwheels or the chain-and-sprocket wheels? Electricity is such an erratic, slippery agent, we might suppose it would "slip a cog," or a great many of them, without knowing the difference. Perhaps I should beg pardon of electricity for speaking thus lightly of its wonderful powers. Well, strange to tell, transmission by the electric fluid is positive, like gearing. When we installed our 35-horse-power dynamo, took down our belting and shafting, and ran two little wires up to the pressroom to the motor, I watched the thing with much curiosity, and was greatly surprised when the press and all the other machinery ran just as steadily, or perhaps more so, if any thing, than when the great cumbersome belting and shafting carried the power from the engine. I said to the boys, "Why should that motor go just so fast and no faster? Why doesn't it go slower when you attach heavy machinery, and especially machinery that has to get over points of great special resistance at every revolution, as is the case with our big press?"

The boys explained to me that the electric motor had got to go just so fast and no faster; that is, if our engine is made to move at a certain speed by means of a governor, the motor, or, if you choose, all the different motors, take up a particular rate, and each one is made to run so fast and stick right to it. The electric current neither jumps ahead nor lags behind. It is right there, steady and true, hour after hour, day and night.

"But," said I, "suppose we hold that motor back by some tremendous resistance — what then?"

The boys answered, "Why, it would spoil the machine if you were to hold it still. Look here. Here is an apparatus called a *rheostat* that cuts off the current and stops the machine before any thing can break. It is a sort of safety-valve or safety-apparatus to prevent damage by awkward manipulation."

Now, this whole matter filled me with won-

der and surprise; and it fills me with wonder and surprise even yet. But this is not all of it. Said I :

"Does this motor here in the press-room run at exactly the same speed as the dynamo in the engine-room?"

"Oh! no, father. This little motor up here runs very much faster than the dynamo or generator down by the engine."

"But what makes it go faster? How in the world does the thing know how fast it ought to go, and why does it stick right there without going at any other speed?"

In studying into this curious matter of electric transmission, I overhauled not only Ernest, my 36-year-old boy, but Huber too, our 14-year-old electrician. They both explained to me that the speed of the motor depended on the size of the wire composing it, and on the way the wires are wound. The motor is made to go at such a speed when the generator that furnishes the power is run at a designated and particular speed. This aroused my curiosity again.

"Why, look here, boys, can you multiply speed by these different motors in the way they are wound? Can you make a motor that, when put on the shaft of a buzz-saw, will give the saw sufficient speed to do its work while the generator runs at about the same speed as the flywheel of the engine?"

The boys answered, "Yes, it can be done, and has been done to some extent; but it costs a great deal more to make generators that run very slowly, and it also costs a great deal more to make motors that run very fast, like a buzz-saw. At the present stage of mechanical and electrical science it is cheaper to multiply speed to a certain extent by means of belting and pulleys. For this reason you generally see the generator in a large plant running a good deal faster than the engine that propels it."

Now, alongside of these facts comes another curious thing. When you move a machine that requires many horse power to turn it, the belt must be very wide, very long, and it must pull with a great deal of force on the machine in order to make it "hug" the pulley. For this reason machinery has to be set on foundation that is very expensive or else it will pull loose. The power pulls on one side. You can readily see this in a thrashing-machine; but a machine may be propelled by electricity—that is, where the motor is placed right on the main driving-shaft, and the machine need be anchored scarcely at all. It can rest on the floor of the room; and as only these little wires are attached to it it can be moved to any spot or angle you choose; for the electric force pushes right round the shaft on all sides alike.

I discovered yesterday, in riding my chainless bicycle up some long high hills, that I could climb them very much easier when I pushed and pulled on the cranks with my toes. Yes, you *can* push and pull with your toes when you learn the trick. Stick your toe upward when the crank is at its highest point, and crowd it from you. At the same time, stick your other toe downward and push back

with it. Push forward with the upper foot, and pull back with the other foot. If you learn the trick you can climb hills without puffing or blowing very much. Now, in place of two cranks suppose we had a dozen, and somebody had hold of each one of the dozen, pulling, not straight ahead, nor up nor down, but right around in that circle all the time. This pulling would not jerk the machine backward nor forward nor up nor down. Well, electric transmission turns the press or other machines in the same way.

Are you curious to know why one motor should go faster and another slower when both are attached to the same wire or set of wires? Well, it depends up the size of the wire that is used in winding the coils, and also on the way they are wound. Forty years ago I made an electric motor. I studied it up from what little I could then learn of electricity. My motor was made so as to both push and pull. I first made a very powerful U magnet, or I made a magnet and got a traveling lecturer to charge it for me. Between the bars of this big U magnet a small straight magnet was made to revolve. This straight magnet was charged by a little battery, by means of a coil of copper wire surrounding it. If I sent the current through in one direction, each end of this bar would pull to get close to the poles of the larger magnet; but just as soon as it got up close to the larger magnet a piece of mechanism reversed the current; then both ends of the little magnet were pushing to get away. After it had made half a circle the current was reversed again, so the thing pushed and pulled alternately, and it made the little shaft hum at such a rate of speed that the young inventor was more astonished than any one else. In fact, after I succeeded in making the machine work to my satisfaction I started out, before I was 18 years old, giving talks to the schools, on electricity and chemistry. So you see it is not very strange that Ernest and Huber take to this new science as ducks do to water; and it is not very strange, either, that they were able to instruct me in the mysteries that have lately been developed in this new science.

Now, before closing I wish to touch upon another point. These things are very wonderful, as you see. Not only are the brightest and busiest brains in the world at work on all these problems, but they have been long years at them. Almost every day chronicles some new and wonderful fact that has just been worked out. I would honor and reverence Edison, Tesla, and all the other true and faithful workers. Others are looking on. The world is getting a glimpse, more or less, of these wonderful achievements. Yes, and even thieves and swindlers are looking on. The vendors of Electropoise and Oxydonor try to make people, who are too busy to notice the difference, believe that they are *also* honest toilers in developing God's hidden treasures. They bring out something that has on the outside a resemblance to an electrical apparatus, and laugh in their sleeves at the credulity of mankind in paying them more money for the humbug toy than an honest machine ought to cost. Even at the World's Fair these fellows

pushed in their claims, and actually had their traps set up alongside of *bona-fide* scientific apparatus in the buildings devoted to electricity. I presume every honest toiler in true mechanical science blushed for shame when he saw these things, and well he might. Yes, it should make the very blood in one's veins boil with indignation to see the way in which sham was permitted to push its way, and to stand side by side with real science. Well, we are becoming better and better educated every day. Even most of our schoolchildren are too well posted to believe that a single wire can carry something that will cure *all kinds of diseases*, and also know that no man living can sit down and write out what the weather will be (so as to put it in his almanac) for a whole year ahead. Great is truth, and will prevail.

AN ELECTRIC BICYCLE-LAMP RUN BY A DYNAMO CARRIED ON THE WHEEL.

Since the above was written, a beautiful little apparatus has been placed in my hands for producing an electric light on a wheel. A little dynamo weighing about two pounds is propelled by resting on the rubber tire; and whenever the wheel is in motion it furnishes a beautiful bright light. The dynamo is a model of simplicity and power in small compass, and of small weight. Like my little model of more than forty years ago it is one of the "push-and-pull" kind. It consists of seven powerful U magnets, and a coil of fine wire revolves between the poles of these magnets. Just think of it—no oil, no fire, no need of matches, and no cost to speak of, for the little lamp will burn 400 hours, or more than a year, even if you use it every night! The extra power used is so little as to be scarcely perceptible. In fact, I can not see that my wheel runs any harder with it than without it. The trifling disadvantages are, that there is no light except when you are in motion; and if you slack up on account of the roads, the light slacks up correspondingly, although there is sufficient, with a very moderate speed, to get along very well. The apparatus is made by the Farnham Electric Co., 59 Clark St., Chicago. Price \$5.00. The whole thing is exceedingly interesting to me because it comes very near solving the problem of lighting our homes by wind power. A very small windmill would furnish sufficient power to give a powerful light. The only trouble is the irregular power furnished by the wind, and at times no power at all. A storage battery will have to be called in to store up the electricity, and let it out (when you "press the button") at an even regular rate. I expect to make some experiments in this line soon, and will report progress.

Perhaps I should add that there are two lamps of different power furnished for the wheel—one for those who ride at a moderate speed, and another for the scorchers. If you run too fast with the former you will be in danger of burning it out. If you do not go fast enough for the latter you would not get much light. But the lamps can be changed, one for the other, in less than a minute.



PATENT MEDICINES.

I have been, as you may know, sending for and testing different patent medicines advertised in the papers, to be sent free of charge. One preparation, very extensively advertised, seemed for a time to produce some effect—at least to the extent of giving relief for the special symptoms it was recommended for. After further trial, however, I could not discover that it made any difference whatever, only that, by taking a full dose, it acted as a physic. This, of course, gave relief to some extent. I requested our Ohio Food Commissioner to make an analysis of the medicine, and he did so. It contained about 12 per cent alcohol, and the predominant chemical agent was epsom salts. In taking the medicine I noticed a familiar taste, but did not succeed in guessing what it was until he mentioned epsom salts. Then the question arose, "Was it the alcohol and the epsom salts that gave temporary relief, or was it the particular root that gave the medicine its name?" I wrote to the Commissioner, and below is his reply:

Mr. A. J. Root:—I have been endeavoring to gather some information for you in reply to your letter of May 17th. I find, however, that the subject is so broad, and my time so limited, I have not made much progress. I would say, however, that, as a rule, the patent-medicine people have a common practice of giving a fanciful name to a very common preparation, and advertising it as a wonderful discovery. I doubt if "—" signifies any thing further than to mystify, interest, and gull people who imagine there is something wrong with them. I do not know that there is any "—" at all in this preparation; but it is a general term, and there are a thousand different roots that might be called "—" root."

The impression is growing on me that a large per cent of patent medicines are fakes, pure and simple. Whether the one to which you refer is a fake or not, I am unable to say at this time.

JOSEPH E. BLACKBURN,
Dairy and Food Commissioner.

Columbus, Ohio, June 14.

I have thought best to suppress the name of the root, because in this case the Commissioner is giving only his opinion; and my impression, after giving the subject a study for many years, and making careful tests as well as I was able, of prominent medicines, is that our Food Commissioner is sound and orthodox in what he gives us in his brief statement above.

The amount of alcohol taken just before meals three times a day might prove to be a temporary stimulant to digestion; and the epsom salts would, no doubt, in many cases, give relief in a great number of troubles with the digestive apparatus. Then some harmless root tincture might be added simply as a blind, and the whole would give us a fair sample of the patent medicines that are sold for one or two dollars a bottle. A free sample to give away would induce many people to make a purchase, especially if a little "imagination" were thrown in. My impression is that this is a fair sample of the medicine business, and that the much-lauded roots and shrubs have little or no effect one way or the other.

A NOVEL SUGGESTION IN REGARD TO KEEPING IN GOOD HEALTH.

The editor of the *Progressive Bee keeper* suggests that one way of preventing sickness is to keep out of debt. He gets his authority for taking this ground from the fact that so many people get sick just after persuading you to trust them—or, at any rate, they write that the reason they can not pay according to agreement is that they have been sick; and this debt that hangs over the head of the family seems to affect the wife and children. One poor man urges, as an excuse for not paying, that they have all been sick for two months—even to the mother-in-law; therefore the *Progressive* advises keeping out of debt if you want to enjoy good health. Now, there is a moral to this little story. The class of people who repeat the story so often about sickness in the family whenever they are urged to make good their promises should remember the thing is getting to be a little threadbare—at least some of the bee-journals think so. Now, may God forbid that I should cast insinuations on those who are doing their best to be prompt. We are all liable to be sick; but in all business ventures I think it behooves us to remember we are none of us sure of being well.

KIND WORDS FROM OUR CUSTOMERS.

Supplies came to hand, and are satisfactory. Sections are the finest I ever saw; everything shows progress.

R. STEHLE.

Marietta, O., June 14.

I received my foundation from the express office today, and am filling frames as fast as I can. It is the finest lot of foundation I ever used.

J. D. GIVENS.

Lisbon, Texas, April 18.

MAKING THINGS GROW BY GIVING THEM "LOVING CARE."

One week ago to-day I planted ten of the tomato seeds you sent me, in ground fixed as fine as could be done; put a stick by each seed to mark the place, and watered the ground lightly with a whisk-broom. Next morning I put a piece of canvas, four double, over them; every evening I took it off, and dampened the soil a little. To-day every seed is up—not a weak one among them. I gave two seeds to a kind neighbor, and, to his delight, both of his are up. I have shaded, watered, and watched my "Darling," and it has begun to grow. I can't tell you the pleasure they give me.

MRS. EMMA SLAUGHTER.

Mayfield, Ky., June 7.

A little spring had lost its way amid the grass and fern; A passing stranger scooped a well, where weary men might turn; He walled it in and hung with care a ladle at the brink; He thought not of the deed he did, but judged that toil might drink. He passed again, and, lo! the well by summers never dried Had cooled ten thousand parching throats, and saved a life besides.—*Farm Journal*.

CONVENTION NOTICE.

The annual meeting of the Northern Illinois Bee-keepers' Association will be held at the court-house in Freeport, Ill., on Tuesday and Wednesday, August 16 and 17, 1898. All interested in bees are invited to attend.

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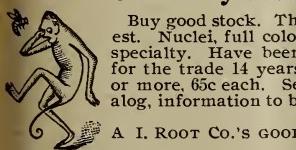
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CHAS. F. MUTH & SON, Cincinnati, O.

In writing, mention GLEANINGS.



BEESWAX.

Although we have a very large stock of wax on hand, we will pay, for the present, 25 cts. cash, 27 in trade, for average wax delivered here. The general market at present may be a little above this figure, but it will very soon be down to this, or below.

A FEW STATISTICS.

In the year beginning July 1, 1897, and ending June 30, 1898, we have made about sixteen million sections of all kinds and sizes, besides buying about four million from other manufacturers and turning away orders for many more. Our output of Weed process foundation in the same time was fifty five tons, while Chas. Dadant & Son made thirty-three tons, or eighty-eight tons in all, or 176,000 lbs. of Weed process foundation sold in the U. S. within the twelve months. Several tons of what we made was exported.

Since we have been making fences we have turned out half a million of the various styles.

ADVANCING PRICES.

There have been, within the past month, or two or three months, considerable advances in the price of several commodities entering into the construction of bee-keepers' supplies. There has been a large advance in window glass, which affects strips for shipping-cases and glass for sections. Sheet zinc has advanced over a cent a pound; and lumber of various grades which we use is from 50 cts. to \$3.00 per thousand feet higher than we paid a year ago. These advances will necessitate the readjusting of prices of many goods, and the new prices will be somewhat higher than they have been.

HONEY PROSPECTS.

In our last issue we made a request for offers of comb and extracted honey, and we have not heard so far from half a dozen people. We have a number of orders for new honey waiting for a supply to fill them, but so far we have got track of none ready for market. We have received plenty of discouraging reports as to the honey crop being a disappointment or an entire failure. In many places where some white honey was gathered, honey-dew was also gathered with it, thereby spoiling its value for market. With a failure entirely in Southern California, where, in an average season, several hundred carloads are produced, and with a very meager crop in many other parts of the country so far as we have learned there ought to be a good demand for honey at better prices than have prevailed in many places during the past two or three years. We should like very much, for our own information in making plans and preparations for next season, to hear from our readers generally as to the prospect for honey in their locality as compared with previous years, both as to quantity and quality, comb and extracted.

ORDERS FILLED PROMPTLY.

As we go to press we can say that all orders are filled with the exception of a few No. 2 grade of sections and a few shipping-cases, besides a large carload of export orders that do not have to go till next week to reach the vessel on which they sail. We have been able for the past two months to supply but a part of the No. 2 grade of sections that have been called for. We make this grade only as they accumulate in making No. 1; and as our lumber has been of unusually good quality it has not run to more than 10 to 15 per cent of No. 2 grade, while the orders have called for about 30 per cent of No. 2; consequently it has been impossible to supply the desired quantity of No. 2 grade. We have shipped during the past ten days to two weeks, over fifteen thousand shipping-cases. These have gone mostly to Colorado, Michigan, and Minnesota; and these are the States where the most encouraging reports of honey-yields so far received have come from.

We have kept our day and night forces going up to the fifteenth; but from now on we shall be able to get along with the daylight run. We expect to make up stock from now on, as well as work on box orders, of which we have orders booked already for about five

carloads. We are in shape now to ship goods of any kind by first train. If in need of any thing, let us hear from you.

Special Notices by A. I. Root.

I expect to leave Cinnabar, Mont., on my wheel-trip through Yellowstone Park on Wednesday, Aug. 3.

ONION-SETS FOR FALL PLANTING.

We are just now gathering a splendid lot of American Pearl, White Victoria, Prizetaker, White Multiplier, and Whittaker. For particulars about fall sowing, see leaflet, free on application. Prices of new onion-sets, quart, 20 cts.; peck, \$1.00; bushel, \$8.50. Large-sized sets, half above prices. If wanted by mail, add 10 cts. per quart extra.

PRIZETAKER ONION-SETS.

We did not sell all our second-size onion-sets last spring, and some are left over. To my great astonishment they are still hard and firm, no sprouting; they are just good, solid, ripe, small-sized onions. Of course, the dry weather may have had something to do with it, but it looks now as if they would keep over till another sea on. In this one respect Prizetaker onion-sets are ahead of any thing else I ever saw or heard of; and so far they seem to answer well for growing large onions the second year.

GROWING LATE CAULIFLOWER.

The cauliflower is emphatically a cold-weather plant. Some of the finest heads we ever saw were grown in the open air late in November. They will stand more frost than cabbage, and almost as much as any other vegetable. For growing this late crop the plants should be put out in July. We have succeeded so many seasons in that way that we are now supplied with a nice lot of plant. Prices: 10 cts. for 10; 75 cts. per 100. If wanted by mail, add 5 cts. for 10 or 25 cts. per 100 for postage. Plants right from the seed-bed, that have not been transplanted, will be half the above prices.

TURNIP SEED.

The old adage,

The 25th of July, be the weather wet or dry,
is about the time for sowing turnips. If you want them only for table use, however, you had better sow them a little later so they will not become too large. And, by the way, turnips for the table should have successive sowings, for they are never really nice where they are too large or too old. About the size of a good-sized apple is just right; and for the table you might sow a little seed once a week, say for five or six weeks. The last sowing will produce them large enough for table use generally, before there is freezing weather enough to hurt them. We can furnish seed promptly of Yellow Aberdeen, White Egg, and Purple-top White-Globe, at the following low prices: Ounce, 5 cts.; pound, 25 cts.; 5 lbs., \$1.00. The last named seems to be the popular all-round fall turnip. But to be nice they ought to be grown quickly, which can not be done during a severe drouth. If dry weather spoils them sow again just after a rain.

C. F. MUTH & SON.

We are sorry to say that complaints are still coming in to the effect that this firm does not settle for honey sent it, nor answer letters. We have written repeatedly, but have had no reply since the death of Mr. C. F. Muth, with the exception of one postal card reading as follows:

Gentlemen:—Your different favors of recent date were received in due time. Since my father's death it has kept us very busy day and night; but we are now catching up, and will write you fully, and explain every thing in a few days. Hoping this is satisfactory, I am Yours truly,

Cincinnati, June 18.

AUG. J. MUTH.

You will notice the above was sent us in time so it might have appeared in our July 1st issue; but as there was a promise of something further in a few days we delayed publication. As we have received nothing further up to date, July 12, we have thought best to submit the above card to our readers. We would also state that we have had the matter looked up, and have reason to believe there is plenty of property to settle all the claims, and a great deal more. The only trouble is that their affairs are even yet a good deal mixed up.